USDA United States Department of Agriculture

Natural Resources Conservation Service

In cooperation with Kentucky Natural Resources and Environmental Protection Cabinet and Kentucky Agricultural Experiment Station

Soil Survey of Garrard and Lincoln Counties, Kentucky

How To Use This Soil Survey

General Soil Map

The general soil map, which is a color map, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

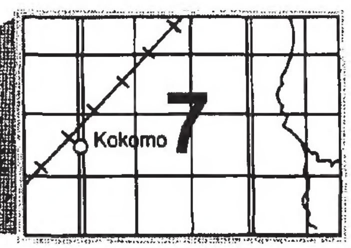
Detailed Soil Maps

The detailed soil maps can be useful in planning the use and management of small areas.

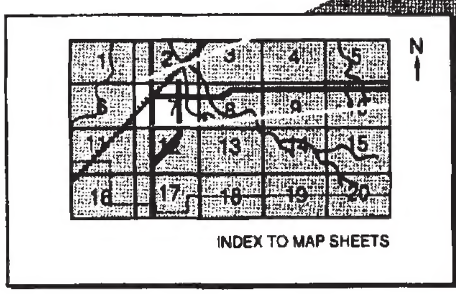
To find information about your area of interest, locate that area on the **Index to Map Sheets.** Note the number of the map sheet and turn to that sheet.

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Contents**, which lists the map units by symbol and name and shows the page where each map unit is described.

The **Contents** shows which table has data on a specific land use for each detailed soil map unit. Also see the **Contents** for sections of this publication that may address your specific needs.



MAP SHEET



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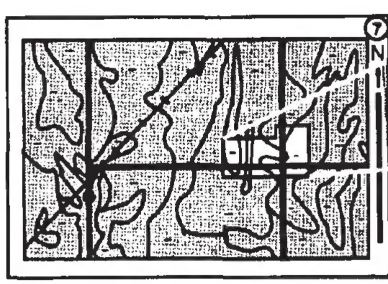

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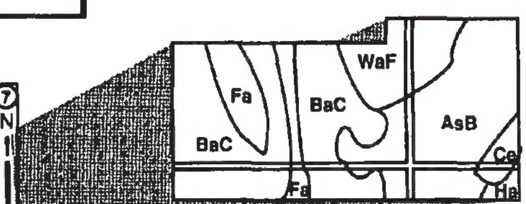

AREA OF INTEREST

NOTE: Map unit symbols in a soil survey may consist only of numbers or letters, or they may be a combination of numbers and letters.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1996. Soil names and descriptions were approved in 1996. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1996. This survey was made cooperatively by the Natural Resources Conservation Service, the Kentucky Natural Resources and Environmental Protection Cabinet, and the Kentucky Agricultural Experiment Station. The survey is part of the technical assistance furnished to the Garrard County Conservation District and the Lincoln County Conservation District.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

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Cover: The House at Travelers Rest, the estate of Isaac Shelby, who was the first Governor of Kentucky. The house is in an area of Crider silt loam, 2 to 6 percent slopes. Crider is the State soil of Kentucky.

Additional information about the Nation's natural resources is available on the Natural Resources Conservation Service home page on the World Wide Web. The address is http://www.nrcs.usda.gov.

Contents

Issued 2006

Foreword

This soil survey contains information that affects land use planning in this survey area. It contains predictions of soil behavior for selected land uses. The survey also highlights soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. The information in this report is intended to identify soil properties that are used in making various land use or land treatment decisions. Statements made in this report are intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use for septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

David G. Sawyer
State Conservationist
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Soil Survey of Garrard and Lincoln Counties, Kentucky

By Harry S. Evans and John A. Kelley, Natural Resources Conservation Service

Fieldwork by Rebecca Burt, Douglas Dotson, Robert A. Eigel, Harry S. Evans, John Graham, and John A. Kelley, Natural Resources Conservation Service, and James P. Fehr and Gerald A. Richardson, Kentucky Natural Resources and Environmental Protection Cabinet

United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with
Kentucky Natural Resources and Environmental Protection Cabinet and Kentucky Agricultural Experiment Station

Garrard and Lincoln Counties are in the central part of Kentucky (fig. 1). The combined area of the two counties is about 571 square miles. Garrard County has an area of about 149,728 acres, and Lincoln County has an area of about 215,482 acres *(51)*. According to the 2000 Census, the population of Garrard County was 14,792 and the population of Lincoln County was 23,361 *(50)*.

Garrard County is bounded on the north by the Kentucky River, on the east by Madison County, on the southeast by Rockcastle County, on the southwest by Lincoln County, and on the west by Boyle and Mercer Counties. Lincoln County is bounded on the northeast by Garrard County, on the southeast by Rockcastle County, on the south by Pulaski County, on the west by Casey County, and on the northwest by Boyle County.

Garrard County and the northern part of Lincoln County are in the Kentucky Bluegrass Land Resource Area. The southern part of Lincoln County is in the Highland Rim and Pennyroyal Land Resource Area *(46)*.

This soil survey updates the survey of Garrard County published in 1924 *(38)*. It provides additional information and has larger maps, which show the soils in greater detail.

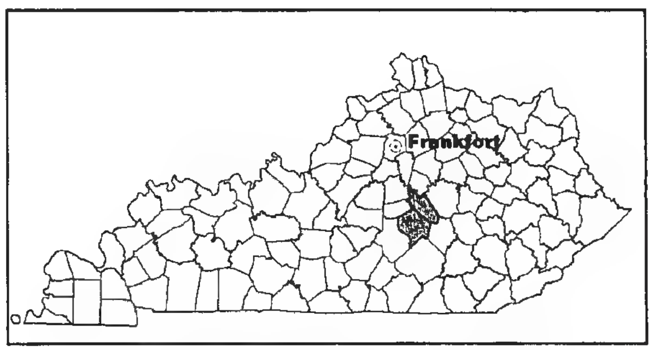

Figure 1.—Location of Garrard and Lincoln Counties in Kentucky.

General Nature of the Survey Area

This section provides general information concerning Garrard and Lincoln Counties. It describes early history, farming, natural resources, topography and drainage, and climate.

Early History

The rich resources and fertile land of the territory attracted early settlers to Kentucky. Issac Shelby, Kentucky's first governor, was drawn by the abundant and fertile land. He settled in the area of Lincoln County in 1783. His estate was known as Travelers Rest and was near Knob Lick. Skaggs Trace, one of the important early overland routes of settlement into Kentucky, had a major stop at Crab Orchard in southeastern Lincoln County. William Whitley, an early settler of Kentucky, is credited with building the first

brick house west of the Allegheny Mountains. The house, which is still standing, is sometimes referred to as Sportsmans Hill because it overlooked a racetrack. The house is near Crab Orchard *(29)*.

Lincoln County was one of three original counties in Kentucky formed in 1780 from Kentucky County, Virginia. It was named for General Benjamin Lincoln, a Revolutionary War commander. Stanford, the county seat of Lincoln County, was issued a charter in 1786. It was one of the first chartered towns in the Kentucky territory of Virginia *(27)*. Stanford was established near one of Kentucky's first settlements, Logan's Station, which was started in 1775.

Garrard County was formed in 1796 from parts of Lincoln, Madison, and Mercer Counties *(27)*. It was named for Governor James Garrard. Lancaster, the county seat, was established in 1797. Early stations or small defensible residences in the area included Walter Miller's Station, established in 1776 near Paint Lick, and James Smith's Station, established in 1779 near Bryantsville *(29)*. The Kentucky River, the county's northern boundary, was an important avenue for commerce during the early years of settlement.

Farming

The agricultural economy of Garrard and Lincoln Counties is diverse and strong. In 1997, about 83 percent of the acreage of Garrard County and 80 percent of the acreage of Lincoln County were used for farms *(40)*. There were 880 farms that averaged 142 acres each in size in Garrard County and 1,258 farms that averaged 135 acres each in size in Lincoln County. About 86,048 acres of Garrard County and about 110,084 acres of Lincoln County were used for cropland. About 30,597 acres of this cropland was harvested in Garrard County, and about 48,662 acres of cropland was harvested in Lincoln County. A large number of farms are family owned and operated. About half of the farmers have a principal occupation other than farming.

Tobacco, corn, soybeans, and hay are the main crops grown in the counties. Tobacco is the main cash crop. In 1997, about 3,780 acres of tobacco was harvested in Garrard County and about 3,650 acres was harvested in Lincoln County *(25)*. Vegetables, fruits, and ornamental crops have added to the local agricultural economy in recent years.

Dairy and beef cattle are important to the agricultural economy of both counties. In 1997, Garrard County was ranked 19th in the State for the number of all cattle and calves and Lincoln County was ranked 5th. Lincoln County is a leading producer of beef cows. Milk production is an important part of Lincoln County's agricultural economy. In 1997, Lincoln County was ranked 8th in the State for milk production. Several farms in the Inner Bluegrass region of Garrard County produce horses. Both counties produce large amounts of hay. Hay production is an integral part of crop rotations on many farms in the survey area. In 1997, about 24,600 acres of hay was harvested in Garrard County and about 38,800 acres was harvested in Lincoln County *(25)*. Lincoln County is a leading producer of alfalfa hay. Most of the forage and grain crops are fed locally to livestock.

Natural Resources

The most important natural resources in the survey area are soil, water, timber, and limestone. Resources of minor extent include barite, clay shale, oil, and gravel. Soil is one of the most valuable resources because it is the main resource for the production of food and fiber. This is an important consideration when managing the soils for the most appropriate uses.

Water is generally adequate for domestic use throughout the survey area. Most of the incorporated towns and many of the rural areas are served by community water systems. Wells, developed springs, and cisterns provide water to most farmsteads *(34, 69)*. Farm ponds, small lakes, and creeks throughout the survey area are used for livestock water, irrigation, fishing, and swimming (fig. 2). Herrington Lake, an impoundment of the Dix River, is a major recreational site. The Kentucky River is also used for recreation.

Woodland makes up about 24 percent of the total acreage of Garrard County and about 30 percent of the total acreage of Lincoln County *(42)*. Most of the woodland is on soils that are too steep or too wet for farming. Most areas of woodland have been logged in the past, and logging continues to be a source of income for landowners.

Limestone has been quarried from several locations in the survey area *(59, 62, 63, 67, 71)*. Active quarries produce agricultural lime, gravel, and rock for various uses. Gravel is excavated from creeks, especially in Lincoln County, and used for farm roads and barn lots.

Numerous oil wells have been drilled in the survey area, but their success was limited. Many of the wells were dry, produced gas or brine, or produced only a few barrels of oil a day *(56, 59, 61, 63, 64, 65, 67, 69, 70)*.

Clay shale occurs in the survey area and is especially abundant along the base of the Knobs. Some of the shale is suitable for making brick and tile *(55, 56, 59, 64, 69)*. Barite occurs in several locations

Figure 2.—A recreational lake and park in an area of Faywood-Shrouts complex, 12 to 25 percent slopes, eroded, rocky.

and was mined in the past *(56, 61, 63, 64, 65, 71)*. Gravel from creeks is excavated and used locally for farm roads and barn lots *(55, 64, 69)*.

Topography and Drainage

The topography of Garrard and Lincoln Counties is diverse. The survey area is in parts of two major land regions. Garrard County is in the Kentucky Bluegrass Land Resource Area, and Lincoln County is in the Kentucky Bluegrass and the Highland Rim and Pennyroyal Land Resource Areas *(46)*. The survey area can be further divided into the Inner Bluegrass, the Outer Bluegrass, the Hills of the Bluegrass, the Knobs, and the Pennyroyal physiographic regions *(4, 30)*.

The survey area is in three major watersheds: the Kentucky River, the Green River, and the Cumberland River. Garrard County and the northern part of Lincoln County are in the Kentucky River watershed. Most of the southern part of Lincoln County is in the Cumberland River watershed. The southwestern part of Lincoln County is in the Green River watershed.

The northwestern part of Garrard County is in the Inner Bluegrass physiographic region. This region is made up of gently rolling, broad ridgetops and short hillsides. This area is karst, and sinkholes are common. The nearly level and sloping soils on the ridgetops are used mainly for corn, tobacco, hay, and pasture. The sloping and moderately steep hillsides are used mainly for pasture. This area is drained by the lower Dix River, the Kentucky River, and their tributaries.

The northeastern part of Garrard County is in the Hills of the Bluegrass physiographic region. This strongly dissected area is made up of moderately steep to very steep hillsides and long narrow ridgetops. The nearly level to sloping soils on the

Figure 3.—View from Halls Gap through the Knobs region to the Outer Bluegrass region.

ridgetops are used mostly for hay and pasture, but some small tracts are used for tobacco and corn. The moderately steep and steep soils on the hillsides are used mostly for pasture. Some hillsides have dense stands of eastern red cedar. This area is drained by Sugar Creek, Back Creek, lower Paint Lick Creek, and tributaries of the Kentucky River.

Central Garrard County and most of the northern part of Lincoln County are in the Outer Bluegrass physiographic region. This region is made up mainly of rolling to undulating ridgetops, hillsides, and narrow flood plains. The nearly level to sloping soils on ridgetops are used mainly for corn, tobacco, small grains, and hay. The moderately steep and steep soils on the hillsides are used for pasture and woodland. This region is drained by the Dix River, upper Paint Lick Creek, the headwaters of Sugar Creek, Cedar Creek, and Hanging Fork Creek.

Southeastern Garrard County, a band across central Lincoln County, and western Lincoln County are in the Knobs physiographic region. Steep hillsides, narrow ridgetops, and an occasional conical knob characterize this highly dissected region (fig. 3). This region also includes the flood plains of the Green River. Toward the inner edge of the region, broad undulating ridges occur. The nearly level soils on the ridgetops near the base of the Knobs are used mainly for corn, tobacco, and hay. The sloping and moderately steep soils on the hillsides are mainly used for pasture, and the very steep soils on side slopes are used for woodland. The soils on the nearly level flood plains along the Green River are used mostly for cultivated crops, especially corn and soybeans. In Garrard County, the Knobs region is drained by the tributaries of the upper Dix River, Copper Creek, and the headwaters of Paint Lick Creek. In Lincoln County, the Knobs region is drained by the upper Dix River, upper Cedar Creek, the Green River, and upper Hanging Fork Creek.

The southern part of Lincoln County is in the Pennyroyal physiographic region. This region consists of sloping to rolling ridgetops, steep hillsides, and narrow flood plains. The nearly level to sloping soils are used mostly for row crops, hay, and pasture. The moderately steep soils are used for pasture and woodland. This region is drained by Buck Creek, Fishing Creek, and tributaries of the Green River.

The elevation in Garrard County ranges from 497

feet at the normal pool stage of the Kentucky River as it leaves the county to about 1,400 feet in the Knobs area around Cartersville. The elevation in Lincoln County ranges from 770 feet at the confluence of Hanging Fork Creek and the Dix River to 1,440 feet in the Knobs area west of Moreland.

Climate

Table 1 gives data on temperature and precipitation for the survey area as recorded at Waynesburg, Kentucky, in the period 1961 to 1990. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on the length of the growing season.

In winter, the average temperature is 35.4 degrees F and the average daily minimum temperature is 25.8 degrees. The lowest temperature on record, which occurred at Waynesburg on January 24, 1963, was -22 degrees. In summer, the average temperature is 73.0 degrees and the average daily maximum temperature is 83.9 degrees. The highest recorded temperature, which occurred at Waynesburg on July 9, 1988, was 102 degrees.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The average annual total precipitation is 52.13 inches. Of this, about 25.9 inches, or 50 percent, usually falls in May through October. The growing season for most crops falls within this period. The heaviest 1-day rainfall during the period of record was 7.19 inches at Waynesburg on March 31, 1965. Thunderstorms occur on about 45 days each year, and most are between May and August.

The average seasonal snowfall is 17.9 inches. The greatest snow depth at any one time during the period of record was 17 inches, recorded on March 12, 1960. On an average, 16 days per year have at least 1 inch of snow on the ground. The heaviest 1-day snowfall on record was 10.0 inches, recorded on November 3, 1966.

The average relative humidity in mid-afternoon is about 59 percent. Humidity is higher at night, and the average at dawn is about 81 percent. The sun shines 66 percent of the time possible in summer and 45 percent in winter. The prevailing wind is from the southwest. Average windspeed is highest, around 11 miles per hour, from December to April.

How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils and miscellaneous areas in the survey area are in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept or model of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries *(48)*.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically.

Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile *(45)*. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

General Soil Map Units

The general soil map shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, it consists of one or more major soils or miscellaneous areas and some minor soils or miscellaneous areas. It is named for the major soils or miscellaneous areas. The components of one map unit can occur in another but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

Gently Sloping to Very Steep, Well Drained, Very Deep to Shallow Soils on Karst Uplands; Underlain by Limestone

This group consists of well drained, very deep to shallow soils that have a loamy surface layer and a loamy or clayey subsoil.

The two map units in this group make up about 8 percent of the survey area. They make up about 19 percent of Garrard County and about 1 percent of Lincoln County. Most of the acreage is used for cultivated crops, hay, and pasture. Some of the steeper areas are wooded. Moderately slow and slow permeability, slope, depth to bedrock, and Rock outcrop are the main limitations affecting most uses.

1. Fairmount-Faywood-Rock outcrop

Rock outcrop and shallow to moderately deep, sloping to very steep, well drained soils that have a clayey subsoil; formed in material weathered from interbedded limestone and calcareous shale; on uplands

This map unit consists of soils and Rock outcrop on bluffs, side slopes, and shoulder slopes along the Kentucky River and the lower Dix River. It is in northern Garrard County, in the Inner Bluegrass physiographic region. Many areas have karst topography. The unit has many intermittent streams that drain into the Kentucky and Dix Rivers or into limestone sinks. This map unit is part of the Kentucky Palisades. Slopes generally range from 6 to 120 percent.

This map unit makes up about 1 percent of the survey area and 3 percent of Garrard County. It is about 38 percent Fairmount soils, 26 percent Faywood soils, 20 percent Rock outcrop, and 16 percent soils of minor extent.

The Fairmount soils are on shoulder slopes, side slopes, and bluffs. They formed in material weathered from limestone and calcareous shale. They are shallow. Permeability is slow. Typically, the surface layer is dark brown silty clay loam. The subsoil is dark yellowish brown flaggy silty clay.

The Faywood soils are on the sloping to very steep side slopes and on bluffs. They formed in material weathered from limestone interbedded with calcareous shale. They are moderately deep. Permeability is slow or moderately slow. Typically, the surface layer is brown silty clay loam. The subsoil is dark yellowish brown silty clay in the upper part and yellowish brown and light olive brown mottled clay in the lower part.

The Rock outcrop covers much of the very steep bluffs and also occurs in scattered areas in the less sloping parts of the map unit.

Of minor extent are Nolin soils on the Kentucky River flood plain, Chenault soils on ridgetops, and Culleoka, Eden, and Lowell soils on side slopes.

In most areas this map unit is used for woodland. Some of the minor soils on the narrow flood plains have been used for hay, pasture, or cultivated crops. Much of the area has been set aside as a nature preserve.

The soils in this map unit are not suited to farming because of the slope, depth to bedrock, and Rock outcrop.

These soils are suited to woodland and wildlife habitat. The main concerns in managing the moderately steep and steep areas for timber are an

erosion hazard, an equipment limitation, seedling mortality, and plant competition. The very steep areas are poorly suited to woodland.

The soils are generally not suited to urban uses because of the slope and the depth to bedrock.

2. Sandview-Faywood-Lowell

Very deep to moderately deep, gently sloping to steep, well drained soils that have a clayey subsoil; formed in a silty mantle over residuum from phosphatic limestone or in material weathered from interbedded phosphatic limestone and calcareous shale; on uplands (fig. 4)

This map unit consists of soils on broad ridgetops and side slopes. The ridgetops are long and broad and are uniform in elevation. The side slopes are short and are highly dissected by small drainageways. Many areas have karst topography. This map unit is in the northwestern part of the survey area, mainly in Garrard County. It is in the Inner Bluegrass physiographic region. This map unit has many intermittent streams and a few perennial streams that drain mainly into the Dix River or into limestone sinks. In many areas these soils are high in phosphates. Slopes generally range from 2 to 25 percent.

This map unit makes up about 6 percent of the survey area. It makes up about 16 percent of Garrard County and about 1 percent of Lincoln County. It is about 30 percent Sandview soils, 18 percent Faywood soils, 18 percent Lowell soils, and 34 percent soils of minor extent.

The Sandview soils are on broad ridgetops. They are very deep. They formed in a mantle of silty material over residuum weathered from limestone. They are very deep. Permeability is moderate in the upper part of the subsoil and moderately slow in the lower part. Typically, the surface layer is brown silt loam. The subsoil is dark yellowish brown, brown, and strong brown silt loam and silty clay loam in the upper part and strong brown and brown silty clay in the lower part.

The Faywood soils are on side slopes. They formed in material weathered from limestone interbedded with calcareous shale. They are intermingled with the Lowell soils and the minor Fairmount soils. They are moderately deep. Permeability is slow or moderately slow. Typically, the surface layer is brown silty clay loam. The subsoil is dark yellowish brown silty clay in

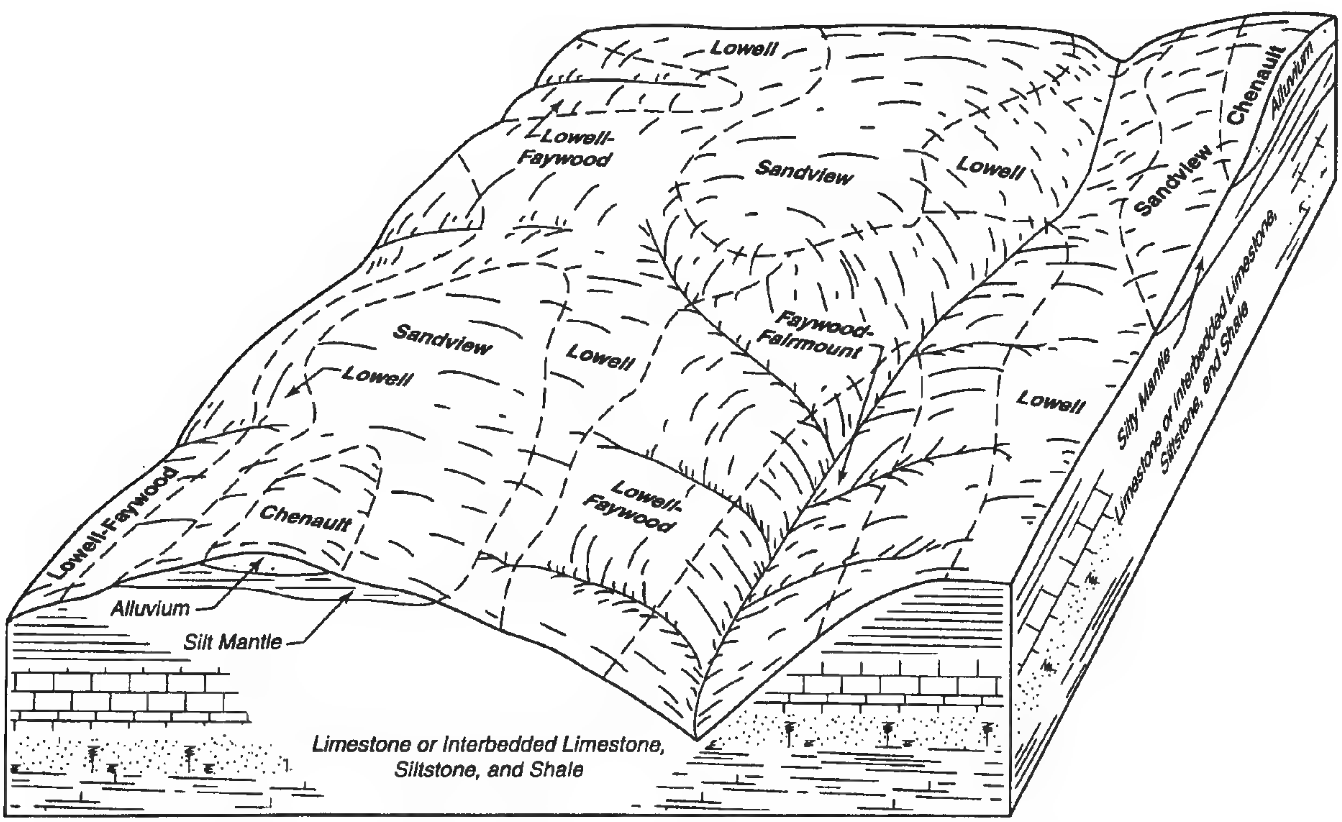

Figure 4.—Typical pattern of soils and underlying material in the Sandview-Faywood-Lowell general soil map unit.

the upper part and yellowish brown and light olive brown mottled clay in the lower part.

The Lowell soils are on ridgetops and side slopes. They formed in material weathered from limestone interbedded with calcareous shale. On the side slopes they are intermingled with the Faywood soils. They are deep and very deep. Permeability is moderately slow. Typically, the surface layer is brown silt loam. The subsoil is dark yellowish brown silty clay in the upper part, strong brown clay in the middle part, and dark yellowish brown clay in the lower part.

Of minor extent are Chenault soils on ridgetops close to the Dix River, Fairmount soils on side slopes, and Nolin soils on narrow flood plains.

In most areas this map unit is used for cultivated crops, hay, and pasture. Many of the horse farms in Garrard County are in this map unit. Uncleared areas are mostly on the steeper side slopes.

The soils in this map unit generally are well suited to farming. Most of the soils are suited to cultivated crops. Erosion is the main hazard, and erosion-control measures are needed. The soils are well suited to all of the commonly grown hay and pasture crops.

The soils are well suited to woodland, but very few areas are used for timber production.

The soils are suited to most urban uses. The depth to bedrock, high content of clay, low soil strength, and shrink-swell potential are limitations.

Gently Sloping to Very Steep, Well Drained, Very Deep to Shallow Soils; Underlain by Interbedded Shale, Siltstone, Marl, and Limestone

This group consists of well drained, very deep to shallow soils that have a loamy surface layer and a clayey or loamy subsoil.

The five map units in this group make up about 52 percent of the survey area. They make up about 69 percent of Garrard County and about 39 percent of Lincoln County. Most of the acreage is used for cultivated crops, hay, and pasture. A very few tracts are used as woodland. Moderately slow and slow permeability, depth to bedrock, and slope are the main limitations affecting most uses.

3. Culleoka-Eden

Moderately deep, sloping to steep, well drained soils that have a loamy or clayey subsoil; formed in siltstone or interbedded shale and limestone bedrock; on uplands (fig. 5)

This map unit consists of soils on narrow ridgetops and side slopes. The ridgetops are long and narrow, and the side slopes are short and highly dissected by drainageways. This unit is in the northeastern part of the survey area, mainly in northern Garrard County. It is in the Hills of the Bluegrass physiographic region. This map unit has many intermittent streams and a few perennial streams that mainly drain into Sugar Creek, Paint Lick Creek, and the Kentucky River. Slopes generally range from 6 to 50 percent.

This map unit makes up about 11 percent of the survey area. It makes up about 25 percent of Garrard County and 1 percent of Lincoln County. It is about 39 percent Culleoka soils, 28 percent Eden soils, and 33 percent soils of minor extent.

The Culleoka soils are on narrow ridgetops and upper side slopes. On the side slopes, they are intermingled with the Eden soils. They formed in material weathered from siltstone and interbedded sandstone, shale, and limestone. They are moderately deep. Permeability is moderate or moderately rapid. Typically, the surface layer is dark brown silt loam. The subsoil is yellowish brown silt loam in the upper part and yellowish brown channery and very channery silty clay loam in the lower part.

The Eden soils are on the lower side slopes. In many areas they are intermingled with the Culleoka soils. They formed in material weathered from limestone and interbedded siltstone and shale. They are moderately deep. Permeability is slow. Typically, the surface layer is brown flaggy silty clay loam. The subsoil is light olive brown flaggy silty clay.

Of minor extent are Nolin soils on narrow flood plains, Lowell and Nicholson soils on the broader ridgetops, and Faywood soils on the upper side slopes.

In most areas this map unit is used for pasture. A few steeper areas are used for woodland. Some small areas on the ridgetops are used for hay and pasture. Some areas are idle and are reverting to brush and woodland.

Most of the soils in this map unit are poorly suited to farming. The gently sloping soils on the broader ridgetops and the minor soils on the flood plains are suited to most of the commonly grown cultivated crops and species of hay. The moderately steep soils are better suited to permanent pasture than to cultivated crops. The slope, depth to bedrock, hazard of erosion, and surface flagstones are limitations.

The soils are suited to woodland. The main concerns in managing the sloping and very steep soils for timber are the erosion hazard, equipment limitation, seedling mortality, and plant competition.

Most of the soils are poorly suited to urban uses. The gently sloping and sloping soils on the ridgetops are suited to some urban uses. The slope, depth to

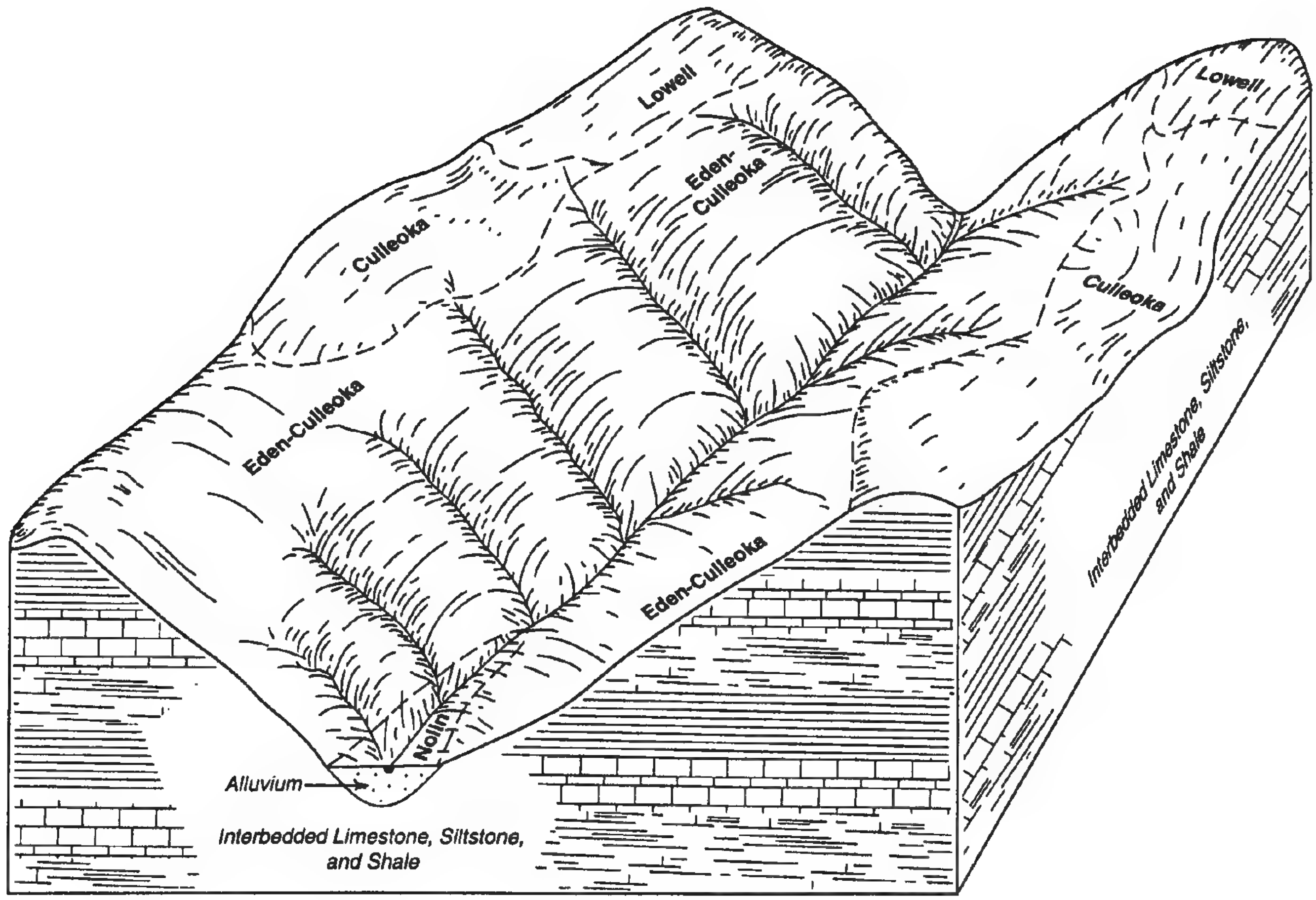

Figure 5.—Typical pattern of soils and underlying material in the Culleoka-Eden general soil map unit.

bedrock, shrink-swell potential, clayey subsoil, low soil strength, and slow permeability are limitations.

4. Lowell-Faywood-Cynthiana

Very deep to shallow, well drained, gently sloping to very steep soils that have a clayey subsoil; formed in material weathered from interbedded limestone and calcareous shale; on uplands (fig. 6)

This map unit consists of soils on long, moderately broad ridgetops and short side slopes separated by narrow flood plains. It is in the central part of the survey area, in the Outer Bluegrass physiographic region. This unit is drained by many intermittent and perennial streams. Slopes generally range from 2 to 50 percent.

This map unit makes up about 20 percent of the survey area. It makes up about 26 percent of Garrard County and about 15 percent of Lincoln County. It is about 29 percent Lowell soils, 21 percent Faywood soils, 17 percent Cynthiana soils, and 33 percent soils of minor extent.

The Lowell soils are on broad ridgetops and upper side slopes. On the side slopes, they are intermingled with the Faywood soils. The Lowell soils formed in material weathered from limestone interbedded with calcareous shale. They are deep and very deep. Permeability is moderately slow. Typically, the surface layer is brown silt loam. The subsoil is dark yellowish brown silty clay in the upper part, strong brown clay in the middle part, and dark yellowish brown clay in the lower part.

The Faywood soils are on the narrow sloping ridgetops and side slopes. On the ridgetops they are intermingled with the Cynthiana soils. On the side slopes they are intermingled with the Cynthiana and Lowell soils. They formed in material weathered from interbedded limestone and calcareous shale. They are moderately deep. Permeability is slow or moderately slow. Typically, the surface layer is brown silty clay

loam. The subsoil is dark yellowish brown silty clay in the upper part and yellowish brown and light olive brown mottled clay in the lower part.

The Cynthiana soils are on the narrow sloping ridgetops and side slopes. They are intermingled with the Faywood soils. They formed in material weathered from interbedded limestone and calcareous shale. They are shallow. Permeability is moderately slow. Typically, the surface layer is brown silty clay loam. The subsoil is dark yellowish brown clay.

Of minor extent are Nicholson and Sandview soils on ridgetops, Lawrence soils on the nearly level parts of the ridgetops, Elk and Otwell soils on stream terraces, and Nolin soils on flood plains.

In most areas this map unit is used for cultivated crops, hay, and pasture. The sloping to moderately steep side slopes are generally used for pasture. Uncleared areas are mostly on the steeper side slopes.

Most of the soils in this map unit are suited to farming. The gently sloping soils on ridgetops and the minor soils on the flood plains and stream terraces are well suited to the commonly grown cultivated crops and species of hay. The moderately steep and steep soils are suited to hay and pasture. The depth to bedrock, hazard of erosion, slope, and rock outcrops are limitations.

The soils are suited to woodland, but few areas are used for timber production. The main concerns in managing the sloping to steep areas for timber are the erosion hazard, equipment limitation, seedling mortality, and plant competition. Plant competition is also a management concern in most of the gently sloping areas.

The gently sloping and sloping soils in this map unit are suited to some urban uses, but the moderately steep and very steep soils are poorly suited. The slope, depth to bedrock, shrink-swell potential, clayey subsoil, low soil strength, and slow permeability are limitations.

5. Lowell-Sandview-Faywood

Very deep to moderately deep, gently sloping to steep, well drained soils that have a clayey or loamy subsoil; formed in material weathered from interbedded limestone and calcareous shale or in a silty mantle over residuum from limestone; on uplands

This map unit consists of soils on ridgetops and side slopes. The ridgetops are broad and uniform in

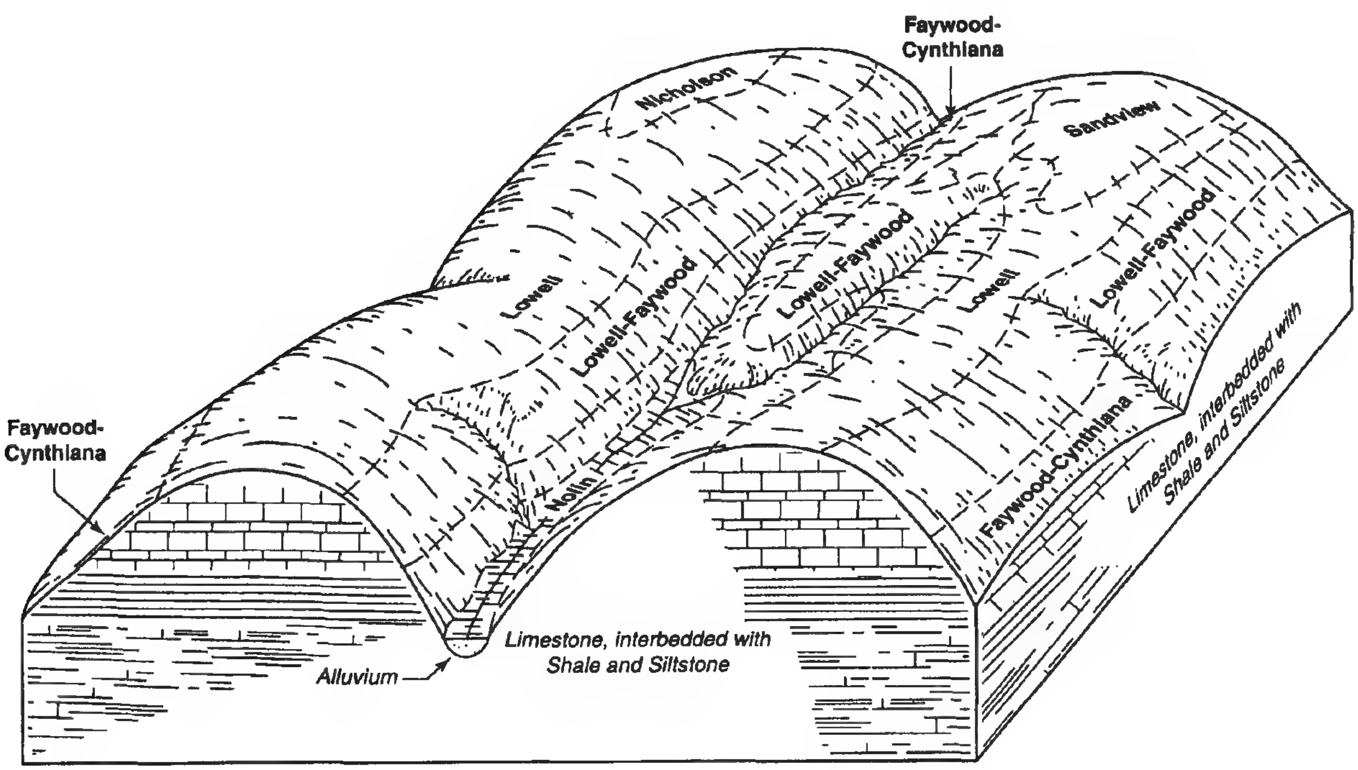

Figure 6.—Typical pattern of soils and underlying material in the Lowell-Faywood-Cynthiana general soil map unit.

elevation. The side slopes are short and are highly dissected by small drainageways. This unit is in the central part of the survey area, mainly in Garrard County. It is in the Outer Bluegrass physiographic region. It has many intermittent streams and some perennial streams. Slopes generally range from 2 to 50 percent.

This map unit makes up about 4 percent of the survey area. It makes up about 8 percent of Garrard County and 2 percent of Lincoln County. It is about 60 percent Lowell soils, 15 percent Sandview soils, 10 percent Faywood soils, and 15 percent soils of minor extent.

The Lowell soils are on the ridgetops and side slopes. On the side slopes, they are intermingled with the Faywood soils. The Lowell soils formed in material weathered from limestone interbedded with calcareous shale. They are deep and very deep. Permeability is moderately slow. Typically, the surface layer is brown silt loam. The subsoil is dark yellowish brown silty clay in the upper part, strong brown clay in the middle part, and dark yellowish brown clay in the lower part.

The Sandview soils are on the broader ridgetops. They are very deep. They formed in a mantle of silty material over residuum weathered from limestone. They are very deep. Permeability is moderate in the upper part of the subsoil and moderately slow in the lower part. Typically, the surface layer is brown silt loam. The subsoil is dark yellowish brown, brown, and strong brown silt loam and silty clay loam in the upper part and strong brown and brown silty clay in the lower part.

The Faywood soils are on the sloping to steep side slopes. On the sloping side slopes they are intermingled with the Lowell soils, and on the steeper side slopes they are intermingled with the minor Cynthiana soils. The Faywood soils formed in material weathered from limestone and calcareous shale. They are moderately deep. Permeability is slow or moderately slow. Typically, the surface layer is brown silty clay loam. The subsoil is dark yellowish brown silty clay in the upper part and yellowish brown and light olive brown mottled clay in the lower part.

Of minor extent are Cynthiana soils on side slopes, Nicholson and Lawrence soils on the nearly level parts of the ridgetops, and Nolin soils on the narrow flood plains.

In most areas this map unit is used for cultivated crops, hay, and pasture. Uncleared areas are mostly on the steeper side slopes.

The soils in this map unit generally are well suited to farming. Most of the soils are suited to cultivated crops. The gently sloping soils on the ridgetops are well suited to most of the cultivated crops and commonly grown hay and pasture crops. Erosion is the main hazard, and erosion-control measures are needed. The moderately steep and steep areas are suited to hay and pasture. The depth to bedrock, erosion hazard, slope, and rock outcrops are limitations.

The soils are well suited to woodland, but very few areas are used for timber production.

The soils are suited to most urban uses. The depth to bedrock, high content of clay, low soil strength, and shrink-swell potential are limitations.

6. Shrouts-Beasley-Garlin

Deep to shallow, gently sloping to steep, well drained soils that have a clayey or loamy subsoil; formed in material weathered from calcareous shale, marl, siltstone, and limestone; on uplands (fig. 7)

This map unit consists of soils on ridgetops and side slopes. The ridgetops are moderately broad to narrow and are rolling. The side slopes are short and dissected by many drainageways. This unit is in the central part of the survey area, in the Outer Bluegrass physiographic region. It is drained by many intermittent streams and some perennial streams that flow mainly into the Dix River. Slopes range from 2 to 50 percent. They are dominantly 6 to 25 percent.

This map unit makes up about 12 percent of the survey area. It makes up about 10 percent of Garrard County and 13 percent of Lincoln County. It is about 30 percent Shrouts soils, 20 percent Beasley soils, 15 percent Garlin soils, and 35 percent soils of minor extent.

The Shrouts soils are on ridgetops and side slopes. In many places, these soils are intermingled with areas of the Garlin soils. They formed in material weathered from soft calcareous shale, limestone, and marl. They are moderately deep. Permeability is slow. Typically, the surface layer is dark yellowish brown silty clay loam. The subsoil is yellowish brown and olive brown mottled silty clay and clay.

The Beasley soils are on broad ridgetops. They formed in material weathered from soft calcareous shale, siltstone, marl, and limestone. They are deep. Permeability is moderately slow. Typically, the surface layer is brown silt loam. The subsoil is strong brown and light olive brown silty clay. The substratum is yellowish brown clay.

The Garlin soils are on narrow ridgetops and side slopes. They are intermingled with areas of the Shrouts soils. They formed in material weathered from interbedded calcareous siltstone, calcareous sandstone, marl, and limestone. They are shallow.

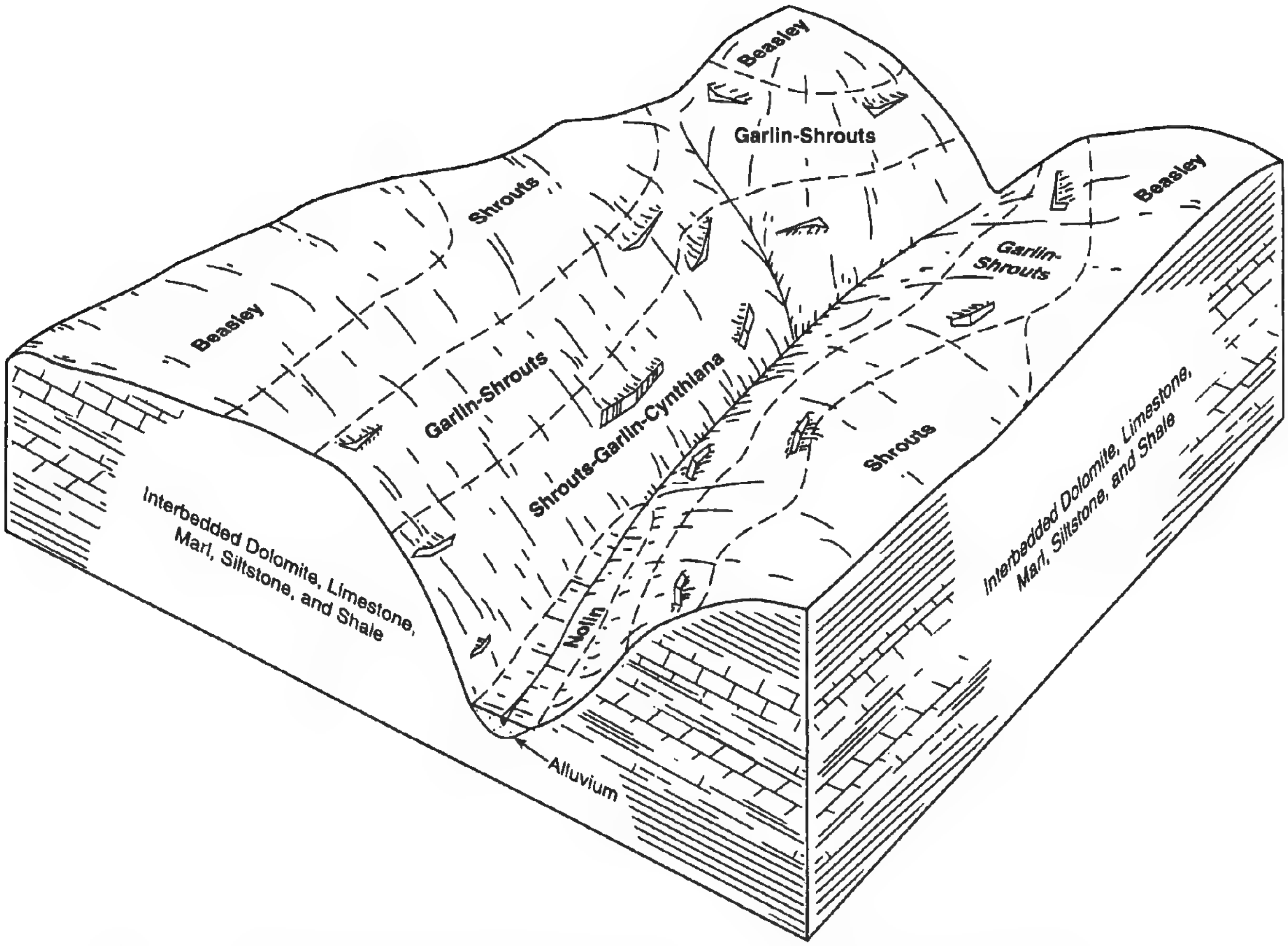

Figure 7.—Typical pattern of soils and underlying material in the Shrouts-Beasley-Garlin general soil map unit.

Permeability is moderate. Typically, the surface layer is very dark grayish brown loam. The subsoil is light olive brown mottled loam.

Of minor extent are Cynthiana soils intermingled with the Shrouts and Garlin soils on the side slopes, Crider and Nicholson soils on the broader ridgetops, Elk and Otwell soils on terraces, and Nolin and Boonesboro soils on flood plains.

In most areas this map unit is used for pasture. The broader, gently sloping and sloping ridgetops are used for cultivated crops, hay, and pasture. Some areas are idle and are reverting to brush and woodland. Uncleared areas are mostly on the steeper side slopes.

Some of the soils in this map unit are suited to farming. The gently sloping soils on the ridgetops are suited to the commonly grown cultivated crops and species of hay. Erosion is the main hazard, and erosion-control measures are needed. The minor soils on the nearly level flood plains and along the gently sloping stream terraces are suited to most of the commonly grown cultivated crops and species of hay. The sloping and moderately steep soils are better suited to permanent pasture than to cultivated crops. The slope, depth to bedrock, hazard of erosion, and rock outcrops are limitations.

The soils in this map unit are suited to woodland. The main concerns in managing the sloping to very steep areas for timber are the erosion hazard, equipment limitation, seedling mortality, and plant competition. Equipment limitation and plant competition are management concerns on the gently sloping ridgetops.

The gently sloping and sloping soils are suited to some urban uses, and the moderately steep and steep soils are poorly suited. The slope, depth to bedrock, shrink-swell potential, high content of clay, low soil strength, and slow permeability are limitations.

7. Crider-Nicholson-Hagerstown

Very deep and deep, gently sloping and sloping, well drained and moderately well drained soils that have a loamy or clayey subsoil; formed in a mantle of silty material over residuum from limestone or in material weathered from limestone; on uplands

This map unit consists of soils on ridgetops, shoulder slopes, and side slopes. The ridgetops are broad and uniform in elevation. The shoulder slopes and side slopes are short and dissected by small drainageways. This unit is in the western part of the survey area, in the Outer Bluegrass physiographic region. It has many intermittent streams and a few perennial streams that mainly drain into Knob Lick Creek. Slopes generally range from 2 to 25 percent.

This map unit makes up about 5 percent of the survey area and about 8 percent of Lincoln County. It is about 44 percent Crider soils, 29 percent Nicholson soils, 12 percent Hagerstown soils, and 15 percent soils of minor extent.

The Crider soils are on broad ridgetops. They formed in a mantle of silty material over residuum weathered from limestone. They are very deep and well drained. Permeability is moderate. Typically, the surface layer is brown silt loam. The subsoil is dark yellowish brown and strong brown silt loam and silty clay loam in the upper part and yellowish red mottled silty clay in the lower part.

The Nicholson soils are on broad, nearly level ridgetops. They formed in a mantle of silty material over residuum weathered from limestone. They are very deep and moderately well drained. Permeability is moderate above the fragipan and slow in the fragipan. Typically, the surface layer is brown silt loam. The upper part of the subsoil is dark yellowish brown and yellowish brown silt loam. The middle part is a firm compact fragipan of yellowish brown mottled silty clay loam. The lower part is yellowish brown mottled clay.

The Hagerstown soils are on narrow ridgetops and shoulder slopes. They formed in material weathered from limestone. They are deep or very deep and are well drained. Permeability is moderate. Typically, the surface layer is dark yellowish brown silt loam. The subsoil is strong brown silty clay loam in the upper part, red silty clay in the middle part, and red clay in the lower part.

Of minor extent are Lawrence soils on upland flats, Faywood and Lowell soils on ridgetops and side slopes, and Nolin soils on narrow flood plains.

In most areas this map unit is used for cultivated crops, hay, and pasture. Uncleared areas are mostly on the steeper side slopes.

The soils in this map unit generally are well suited to farming. Most of the soils are suited to cultivated crops. Erosion is the main hazard, and erosion-control measures are needed. The soils are well suited to all of the commonly grown hay and pasture crops.

The soils are well suited to woodland, but very few areas are used for timber production.

The soils are suited to some urban uses. The high content of clay, depth to bedrock, shrink-swell potential, low soil strength, and wetness are limitations.

Nearly Level to Very Steep, Well Drained to Somewhat Poorly Drained, Very Deep to Moderately Deep Soils on Uplands and Flood Plains; Underlain by Shale, Siltstone, and Limestone or Mixed Alluvium

This group consists of well drained to somewhat poorly drained, very deep to moderately deep soils that have a loamy surface layer and a loamy or clayey subsoil.

The three map units in this group make up about 10 percent of the survey area. They make up about 3 percent of Garrard County and about 16 percent of Lincoln County. Most of the acreage is in cultivated crops, hay, and pasture. Most of the steeper areas are used for woodland. The slope, moderately slow and slow permeability, wetness, flooding, and depth to bedrock are the main limitations affecting most uses.

8. Trappist-Tilsit-Lenberg

Deep and moderately deep, gently sloping to very steep, well drained and moderately well drained soils that have a clayey subsoil; formed in material weathered from shale or in a silty mantle over residuum from shale; on uplands (fig. 8)

This map unit consists of soils on ridgetops and side slopes. The ridgetops are narrow, and the side slopes are short and highly dissected by drainageways. This map unit forms an irregular arc through the survey area. It is in the Knobs physiographic region. Slopes generally range from 2 to 60 percent.

This map unit makes up about 6 percent of the survey area. It makes up about 3 percent of Garrard County and 9 percent of Lincoln County. It is about 34 percent Trappist soils, 18 percent Tilsit soils, 15 percent Lenberg soils, and 33 percent soils of minor extent.

The Trappist soils are on ridgetops and side slopes. They formed in residuum weathered from hard shale.

They are moderately deep and well drained. Permeability is slow. Typically, the surface layer is brown silty clay loam. The subsoil is strong brown and brown silty clay in the upper part and brown channery silty clay in the lower part. The substratum is variegated brown, yellowish red, and pale brown very channery silty clay.

The Tilsit soils are on broad ridgetops near the base of the Knobs. They formed in a mantle of silty material over residuum from shale. They are deep and moderately well drained. Permeability is moderate above the fragipan and slow in the fragipan. Typically, the surface layer is brown silt loam. The upper part of the subsoil is yellowish brown silty clay loam. The middle part is a firm compact fragipan of yellowish brown mottled silty clay loam. The lower part is yellowish brown mottled silty clay loam.

The Lenberg soils are on side slopes above the Trappist soils. They formed in material weathered from soft clayey shale. They are moderately deep and well drained. Permeability is moderately slow. Typically, the surface layer is brown silt loam. The subsoil is yellowish brown and strong brown mottled silty clay in the upper part and olive gray mottled silty clay and channery silty clay in the lower part.

Of minor extent are Jessietown and Berea soils on ridgetops near the Tilsit soils, Colyer soils intermingled with the Trappist soils on side slopes, and Carpenter

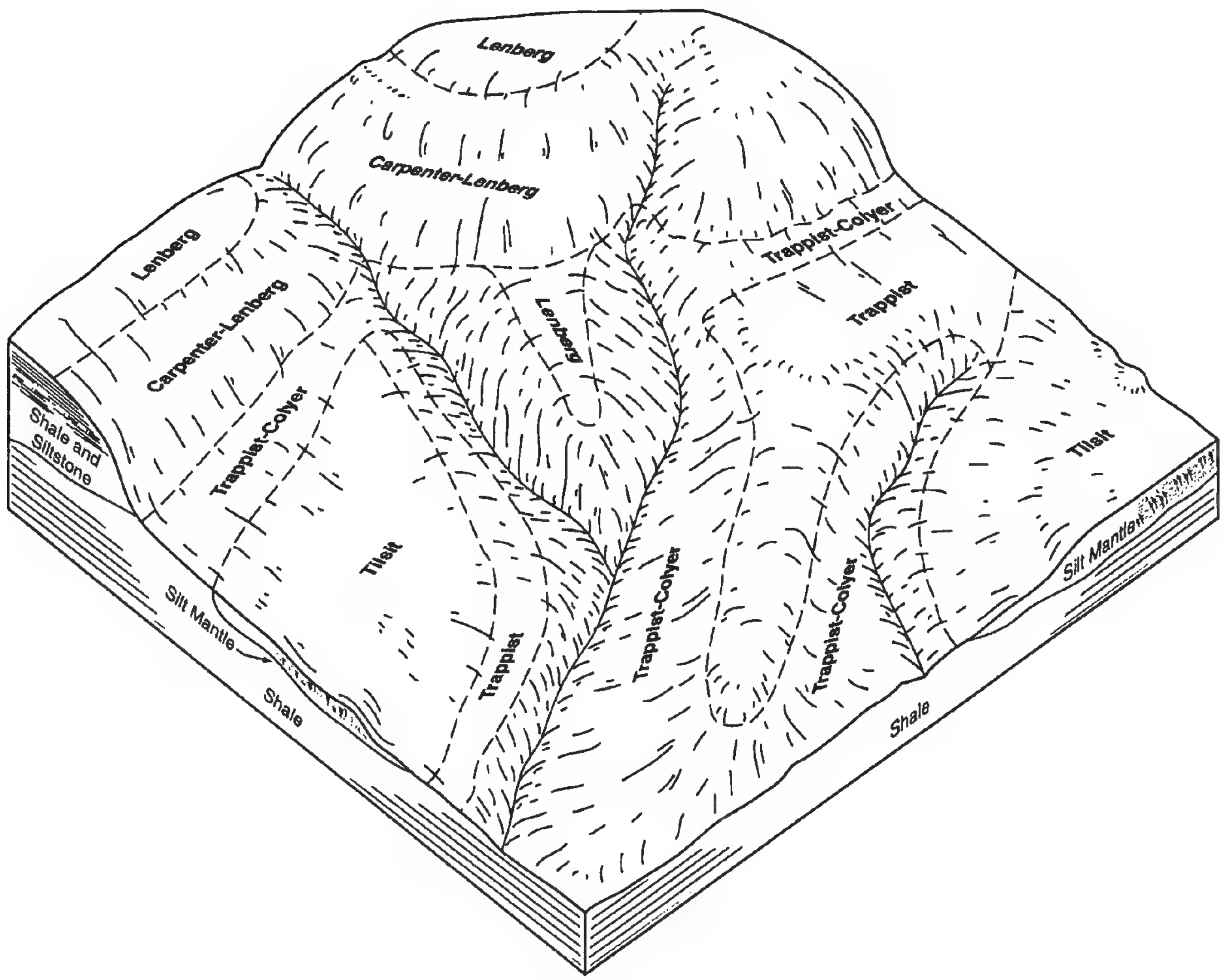

Figure 8.—Typical pattern of soils and underlying material in the Trappist-Tilsit-Lenberg general soil map unit.

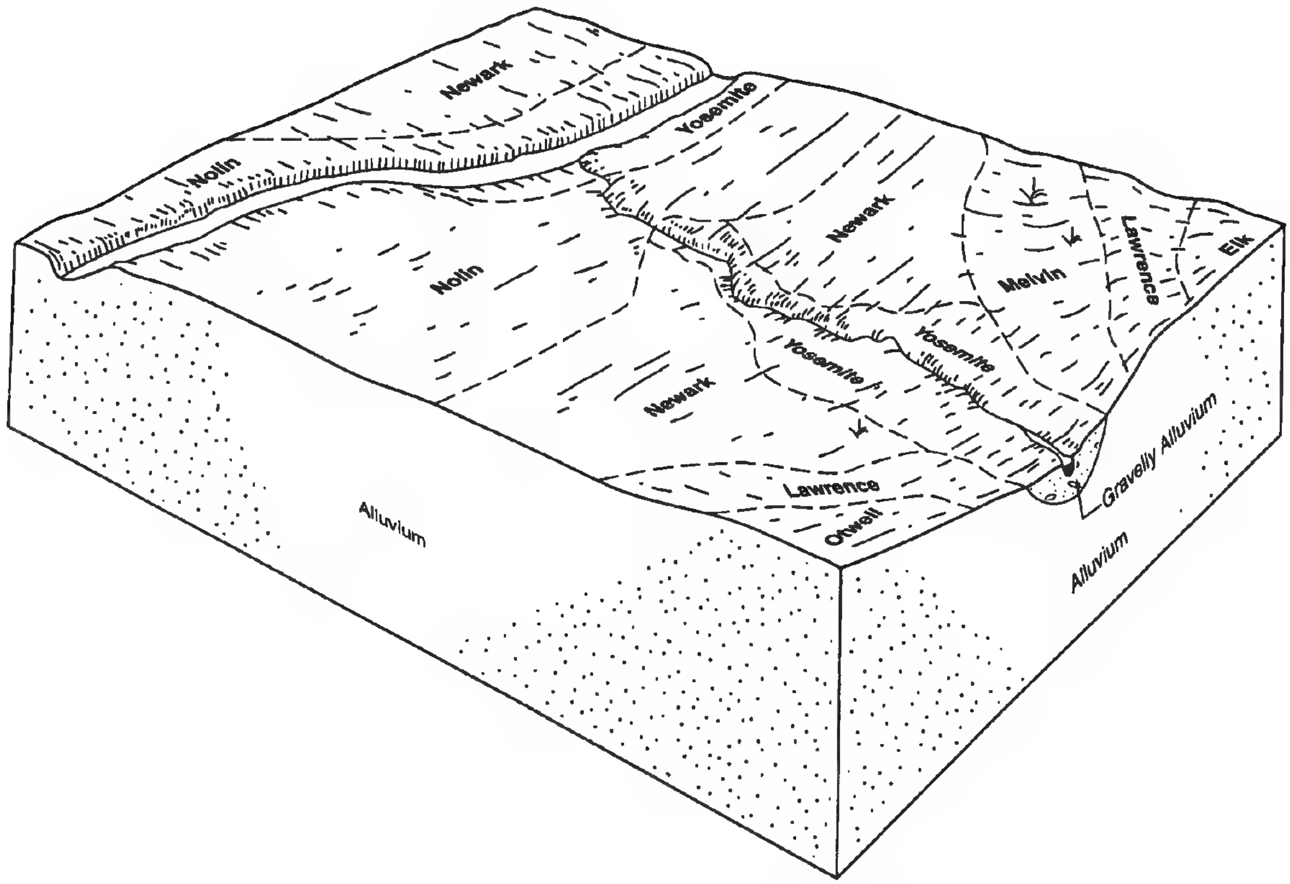

Figure 9.—Typical pattern of soils and underlying material in the Newark-Nolin-Yosemite general soil map unit.

soils on side slopes above the Trappist soils and intermingled with the Lenberg soils on the steeper side slopes.

In most areas this map unit is used for hay, pasture, and woodland. Some gently sloping soils are used for cultivated crops.

The gently sloping and sloping soils in this map unit are suited to most of the commonly grown cultivated crops and species of hay. The hazard of erosion and wetness are limitations. The moderately steep side slopes are better suited to pasture.

The soils in this map unit are suited to woodland. The main concerns in managing the gently sloping and sloping soils for timber are the equipment limitation and plant competition. The main concerns in managing the moderately steep and very steep soils are the erosion hazard, equipment limitation, and plant competition.

The soils are poorly suited to most urban uses because of the depth to bedrock, wetness, slope, and high clay content.

9. Newark-Nolin-Yosemite

Very deep, well drained to somewhat poorly drained, nearly level soils that have a loamy subsoil; formed in mixed alluvium; on flood plains (fig. 9)

This map unit consists of soils on flood plains along the Green River and the Dix River. The flood plains are dissected by many small streams. This unit is in the Knobs physiographic region. Slopes range from 0 to 6 percent.

This map unit makes up about 2 percent of the survey area and about 4 percent of Lincoln County. It is about 37 percent Newark soils, 20 percent Nolin soils, 11 percent Yosemite soils, and 32 percent soils of minor extent.

The Newark soils are on flood plains. They are somewhat poorly drained. Permeability is moderate. Typically, the surface layer is brown silt loam. The subsoil is yellowish brown silt loam in the upper part and grayish brown mottled silt loam in the lower part. The substratum is light grayish brown mottled silty clay loam.

The Nolin soils are on flood plains near the major streams. They are well drained. Permeability is moderate. Typically, the surface layer is brown silt loam. The subsoil is dark yellowish brown silt loam. The substratum is dark yellowish brown mottled silt loam.

The Yosemite soils are on flood plains near the smaller streams. They are somewhat poorly drained. Permeability is moderately rapid. Typically, the surface layer is brown very gravelly silt loam. The subsoil is dark grayish brown mottled very gravelly silt loam. The substratum is grayish brown mottled extremely gravelly loam.

Of minor extent are Melvin soils in low areas, mainly near the footslopes of adjacent hills, and Elk, Lawrence, and Otwell soils on stream terraces.

In most areas this map unit is used for cultivated crops, hay, or pasture. Wooded areas are mostly in wet, low areas.

In most areas this map unit is well suited to farming. Most of the soils are well suited to cultivated crops. Flooding occurs in late winter and early spring. Farming may be delayed in undrained areas because of wetness.

The soils are well suited to woodland, but very few areas are used for timber production. The main concerns in managing the soils for timber are the equipment limitation, seedling mortality, and plant competition.

Most of the soils are poorly suited to most urban uses because of the flooding and wetness. Some of the minor soils on the stream terraces are suited to urban uses.

10. Tilsit-Shrouts

Deep and moderately deep, gently sloping to steep, well drained and moderately well drained soils that have a loamy or clayey subsoil; formed in material weathered from shale or in a silty mantle over residuum from shale; on uplands

This map unit consists of soils on ridgetops and side slopes. The ridgetops are generally broad and uniform in elevation. The side slopes are short and dissected by small drainageways. This unit is in the eastern part of the survey area, in the Knobs and Outer Bluegrass physiographic regions. It has many intermittent streams and a few perennial streams that drain mainly into Cedar Creek and the Dix River. Slopes generally range from 2 to 50 percent.

This map unit makes up about 2 percent of the survey area and about 3 percent of Lincoln County. It is about 36 percent Tilsit soils, 35 percent Shrouts soils, and 29 percent soils of minor extent.

The Tilsit soils are on broad ridgetops near the base of the Knobs. They formed in a mantle of silty material over residuum weathered from hard black shale. They are deep and moderately well drained. Permeability is moderate above the fragipan and slow in the fragipan. Typically, the surface layer is brown silt loam. The upper part of the subsoil is yellowish brown silty clay loam. The middle part is a firm compact fragipan of yellowish brown mottled silty clay loam. The lower part is yellowish brown mottled silty clay loam.

The Shrouts soils are on ridgetops and side slopes below the Tilsit soils. In many places, the Shrouts soils are intermingled with areas of Garlin soils. The Shrouts soils formed in material weathered from calcareous shale, limestone, and marl. They are moderately deep and well drained. Permeability is slow. Typically, the surface layer is dark yellowish brown silty clay loam. The subsoil is yellowish brown and olive brown mottled silty clay and clay.

Of minor extent are Garlin soils intermingled with the Shrouts soils on side slopes, Greenbriar and Jessietown soils on ridgetops near the Tilsit soils, and Johnsburg and Mullins soils in the low-lying areas.

In most areas this map unit is used for cultivated crops, hay, and pasture. The sloping to steep side slopes generally are used for pasture. Some of the steep side slopes are idle and reverting to brush and woodland.

The gently sloping soils in this map unit are suited to most of the commonly grown cultivated crops and species of hay. The sloping to steep side slopes are better suited to hay and permanent pasture than to cultivated crops. The hazard of erosion, depth to bedrock, slope, and wetness are limitations.

The soils in this map unit are suited to woodland. The main concerns in managing the gently sloping and sloping soils for timber are plant competition and seedling mortality. The main concerns in managing the moderately steep and very steep soils are the erosion hazard, equipment limitation, and seedling mortality.

The soils are poorly suited to most urban uses because of the depth to bedrock, wetness, slope, and high clay content.

Gently Sloping to Very Steep, Well Drained and Moderately Well Drained, Very Deep and Deep Soils on Uplands; Underlain by Limestone, Siltstone, and Shale

This group consists of well drained and moderately well drained, very deep and deep soils that have a loamy surface layer and a loamy or clayey subsoil.

The four map units in this group make up about 30 percent of the survey area. They make up about 9 percent of Garrard County and about 44 percent of Lincoln County. Most of the acreage is used for cultivated crops, hay, and pasture. Most of the steeper tracts are wooded. The slope, depth to bedrock, high content of clay, and wetness are the main limitations affecting most uses.

11. Garmon-Carpenter-Lenberg

Very deep to moderately deep, well drained, sloping to very steep soils that have a loamy subsoil; formed in residuum or colluvium from shale, siltstone, and limestone; on uplands

This map unit consists of soils on side slopes and footslopes. The side slopes are short and are highly dissected by small drainageways. The footslopes are dissected by small drainageways. This unit is in the southeastern part of the survey area, in the Knobs physiographic region. It has many intermittent streams and a few perennial streams that drain mainly into Copper Creek, White Lick Creek, and the Dix River. Slopes generally range from 12 to 85 percent.

This map unit makes up about 6 percent of the survey area. It makes up about 9 percent of Garrard County and 1 percent of Lincoln County. It is about 39 percent Garmon soils, 22 percent Carpenter soils, 10 percent Lenberg soils, and 29 percent soils of minor extent.

The Garmon soils are on upper side slopes. They formed in residuum weathered from siltstone and shaly limestone. They are moderately deep and well drained. Permeability is moderately rapid. Typically, the surface layer is brown channery silt loam. The subsoil is yellowish brown and light yellowish brown channery silt loam.

The Carpenter soils are on the lower side slopes and footslopes below the Garmon soils. They formed in loamy colluvium over material weathered from shale or siltstone. They are very deep and deep and well drained. Permeability is moderate in the subsoil and moderately slow or slow in the substratum. Typically, the surface layer is dark yellowish brown gravelly silt loam. The subsurface layer is yellowish brown gravelly silt loam. The subsoil is strong brown gravelly silty clay loam. The substratum is yellowish brown mottled channery silty clay.

The Lenberg soils are on footslopes below the Garmon soils. They are intermingled with the Carpenter soils on the steeper footslopes. They formed in material weathered from soft clayey shale. They are moderately deep. Permeability is moderately slow. Typically, the surface layer is brown silt loam. The upper part of the subsoil is yellowish brown and strong brown mottled silty clay, and the lower part is olive gray mottled silty clay and channery silty clay.

Of minor extent are Gilpin soils on ridgetops above the Garmon soils, Trappist and Colyer soils on toeslopes below the Carpenter and Lenberg soils, and Nolin and Newark soils on narrow flood plains.

In most areas this map unit is used for woodland. Some small areas on the ridgetops and some areas on the flood plains are used for cultivated crops, hay, and pasture.

Most of the soils in this map unit generally are poorly suited to farming because of the depth to bedrock and slope. The moderately steep soils on the lower side slopes are suited to pasture. The hazard of erosion and slope are limitations.

The soils are suited to woodland. The main concerns in managing the moderately steep to very steep side slopes for timber are the erosion hazard, equipment limitation, seedling mortality, and plant competition.

The moderately steep to very steep soils are generally not suited to urban uses because of the slope.

12. Garmon-Frankstown-Carpenter

Very deep to moderately deep, well drained, sloping to very steep soils that have a loamy subsoil; formed in residuum or colluvium from shale, siltstone, and limestone; on uplands (fig. 10)

This map unit consists of soils on side slopes, footslopes, and ridgetops. The side slopes and footslopes are moderately long and are highly dissected by small drainageways. The ridgetops are narrow and undulating. This unit is in the southern part of the survey area, in the Eastern Pennyroyal physiographic region. It has many intermittent and perennial streams that drain mainly into the Green River, Fishing Creek, Buck Creek, and the Dix River. Slopes generally range from 2 to 85 percent.

This map unit makes up about 12 percent of the survey area and 23 percent of Lincoln County. It is about 30 percent Garmon soils, 26 percent Frankstown soils, 11 percent Carpenter soils, and 33 percent soils of minor extent.

The Garmon soils are on the upper side slopes. They formed in residuum weathered from siltstone and shaly limestone. They are moderately deep and well drained. Permeability is moderately rapid. Typically, the surface layer is brown channery silt loam. The subsoil is yellowish brown and light yellowish brown channery silt loam.

The Frankstown soils are on ridgetops. They formed

in material weathered from limestone and siltstone. They are deep and well drained. Permeability is moderate. Typically, the surface layer is brown gravelly silt loam. The subsoil is yellowish brown and strong brown gravelly silt loam in the upper part and strong brown and red gravelly silty clay loam in the lower part.

The Carpenter soils are on the lower side slopes and footslopes below the Garmon soils. They are intermingled with Lenberg soils on the steeper footslopes. They formed in loamy colluvium over residuum from weathered shale or siltstone. They are very deep and deep. Permeability is moderate in the subsoil and moderately slow or slow in the substratum. Typically, the surface layer is dark yellowish brown gravelly silt loam. The subsurface layer is yellowish brown gravelly silt loam. The subsoil is strong brown gravelly silty clay loam. The substratum is yellowish brown mottled channery silty clay.

Of minor extent are Lenberg soils on the lower side slopes intermingled with the Carpenter soils, Pricetown soils on the broader ridgetops, and Skidmore and Yosemite soils on narrow flood plains.

In most areas this map unit is used mainly for pasture and woodland, but some gently sloping soils are used for cultivated crops.

Most of the soils in this map unit generally are poorly suited to farming because of the depth to bedrock and slope. The moderately steep and sloping soils on the lower side slopes are suited to pasture. The soils on the ridgetops are suited to cultivated crops, hay, and pasture. The hazard of erosion and slope are limitations.

The soils are suited to woodland. The main concerns in managing the sloping to very steep side slopes for timber are the erosion hazard, equipment limitation, seedling mortality, and plant competition. The gently sloping and sloping ridgetops have few limitations affecting timber management.

The moderately steep to very steep soils are generally not suited to urban uses because of the slope. The gently sloping and sloping soils on the

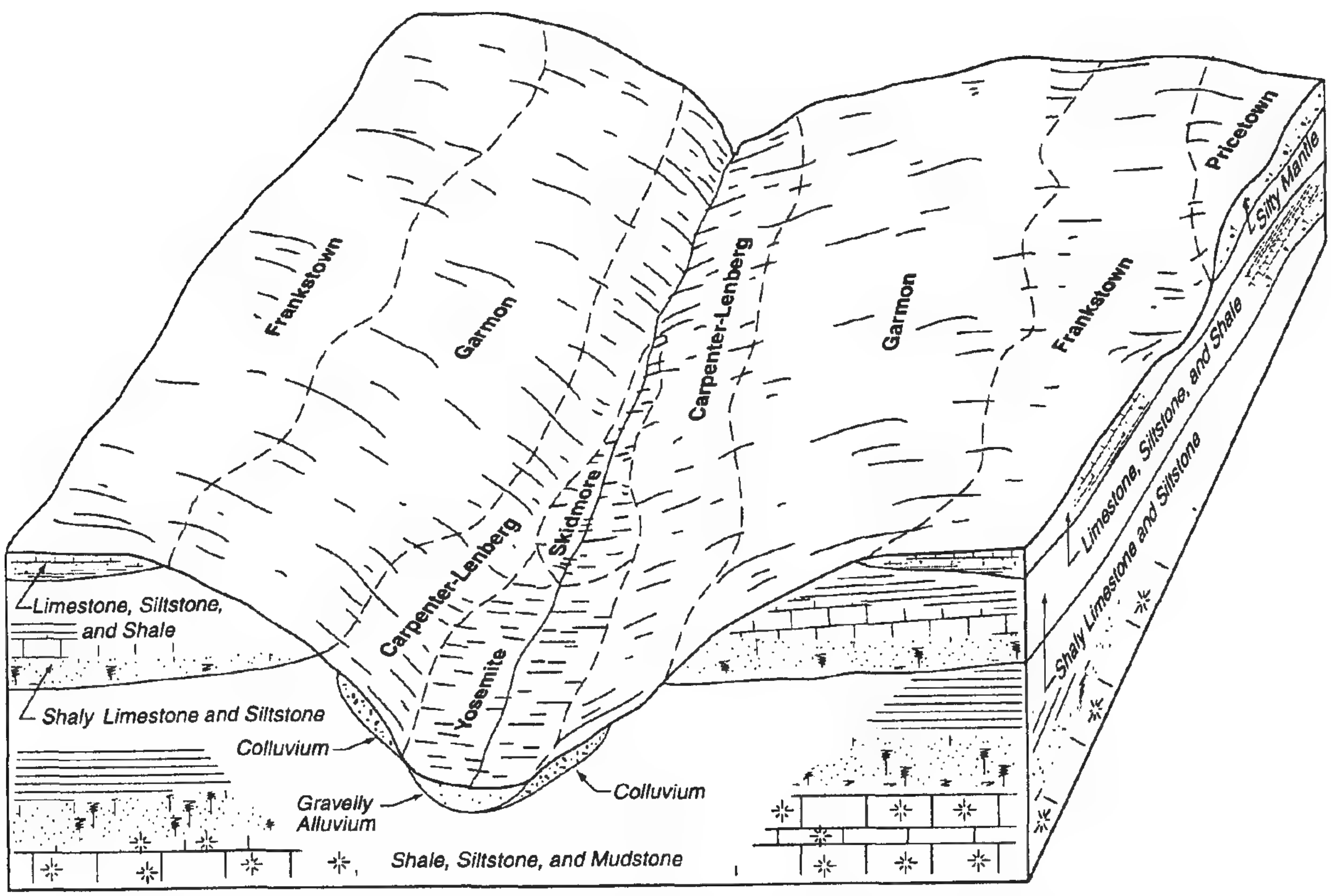

Figure 10.—Typical pattern of soils and underlying material in the Garmon-Frankstown-Carpenter general soil map unit.

ridgetops and the sloping soils on the lower side slopes are suited to some urban uses. The depth to bedrock, shrink-swell potential, and slope are limitations.

13. Pricetown-Teddy-Frankstown

Very deep and deep, well drained and moderately well drained, gently sloping to moderately steep soils that have a loamy subsoil or a loamy and clayey subsoil; formed in a mantle of silty material over residuum weathered from limestone, sandstone, and siltstone or in material weathered from limestone, siltstone, and shale; on uplands (fig. 11)

This map unit consists of soils on ridgetops and shoulder slopes. The ridgetops are long and moderately broad and are uniform in elevation. The side slopes are short and are highly dissected by small drainageways. This map unit is in the southern part of the survey area, in the Pennyroyal physiographic region. It has many perennial streams that drain mainly into Buck Creek. Slopes generally range from 2 to 25 percent.

This map unit makes up about 6 percent of the survey area and 10 percent of Lincoln County. It is about 34 percent Pricetown soils, 24 percent Teddy soils, 11 percent Frankstown soils, and 31 percent soils of minor extent.

The Pricetown soils are on the more sloping parts of the ridgetops. They formed in a mantle of silty material over residuum weathered from limestone. They are very deep and well drained. Permeability is moderate. Typically, the surface layer is brown silt loam. The upper part of the subsoil is yellowish brown and strong brown silty clay loam, and the lower part is reddish brown silty clay.

The Teddy soils are on the more level parts of the ridgetops. They formed in a mantle of silty material over residuum weathered from limestone, sandstone, or siltstone. They are very deep and moderately well drained. Permeability is moderate above the fragipan and slow in the fragipan. Typically, the surface layer is

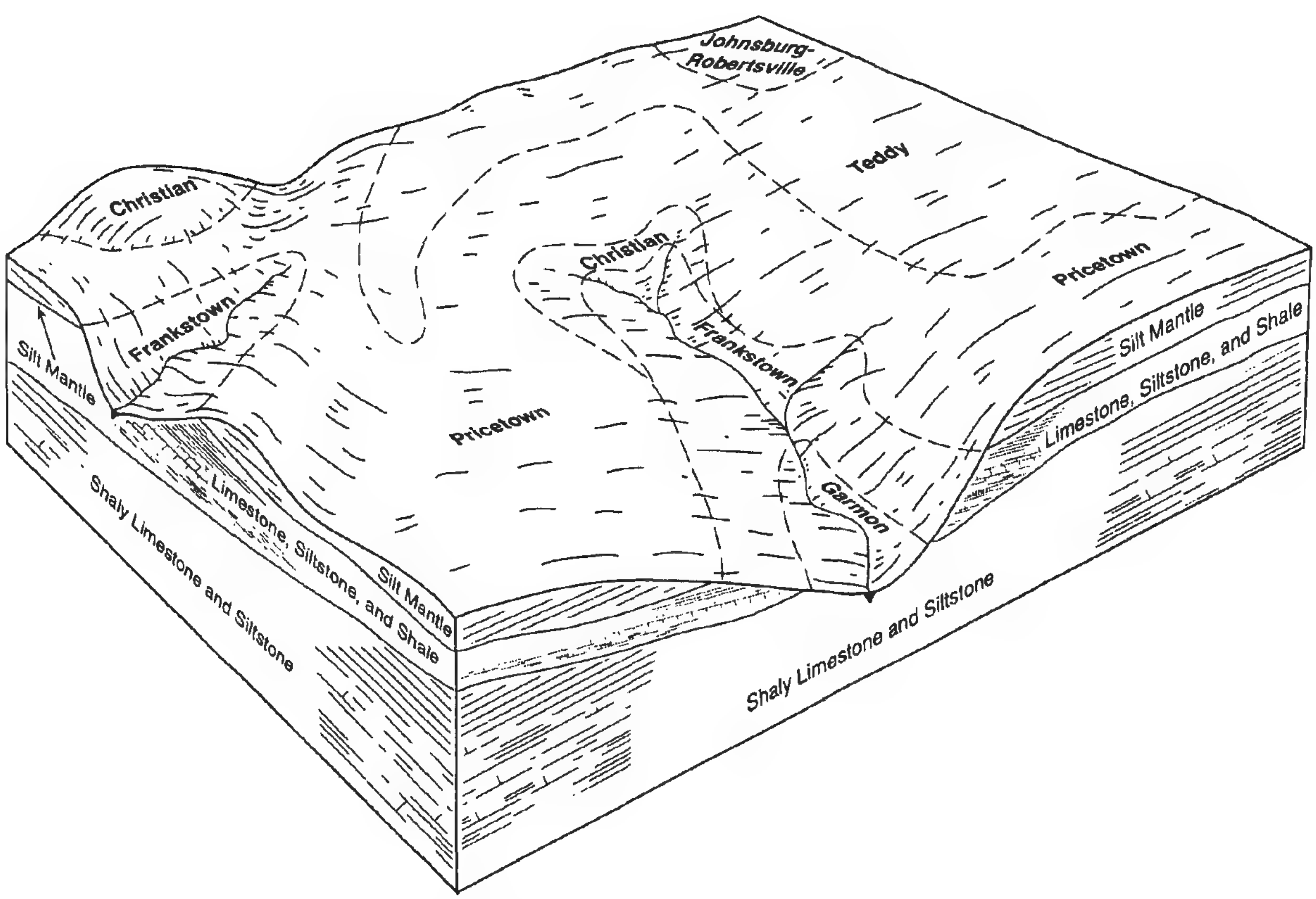

Figure 11.—Typical pattern of soils and underlying material in the Pricetown-Teddy-Frankstown general soil map unit.

Figure 12.—Typical landscape in the Christian-Frankstown general soil map unit.

brown silt loam. The upper part of the subsoil is pale brown loam and yellowish brown silt loam. The middle part is a firm, compact fragipan of yellowish brown mottled silt loam. The lower part is yellowish red mottled clay loam.

The Frankstown soils are on narrow ridgetops and shoulder slopes. They formed in material weathered from limestone and siltstone. They are deep and well drained. Permeability is moderate. Typically, the surface layer is brown gravelly silt loam. The subsoil is yellowish brown and strong brown gravelly silt loam in the upper part and strong brown and red gravelly silty clay loam in the lower part.

Of minor extent are Johnsburg and Robertsville soils on upland flats, Garmon and Christian soils on side slopes, and Nolin and Newark soils on narrow flood plains.

In most areas this map unit is used for cultivated crops, hay, and pasture. Wooded areas are mainly on the steeper slopes.

The soils in this map unit generally are well suited to farming. Most of the soils are suited to cultivated crops. Erosion is the main hazard, and erosion-control measures are needed. The soils are well suited to all of the commonly grown hay and pasture crops.

The soils in this map unit are well suited to woodland, but few areas are used for timber production.

The soils are suited to some urban uses. The high content of clay, depth to bedrock, shrink-swell potential, and wetness are limitations.

14. Christian-Frankstown

Very deep and deep, gently sloping to steep, well drained soils that have a clayey or loamy subsoil; formed in material weathered from limestone, siltstone, and shale; on uplands

This map unit consists of soils on ridgetops and shoulder slopes. The ridgetops are moderately broad and undulating. The side slopes are short and dissected by drainageways. This map unit is in the southern part of the survey area, in the Pennyroyal physiographic region (fig. 12). It has many intermittent streams and perennial streams that drain mainly into Fishing Creek and Buck Creek. Slopes generally range from 2 to 25 percent.

This map unit makes up about 6 percent of the survey area and about 10 percent of Lincoln County. It is about 50 percent Christian soils, 34 percent Frankstown soils, and 16 percent soils of minor extent.

The Christian soils are on ridgetops and shoulder slopes. They formed in material weathered from limestone. They are very deep and well drained. Permeability is moderate. Typically, the surface layer is dark yellowish brown silt loam. The subsoil is yellowish brown silty clay loam in the upper part, red silty clay in the middle part, and red mottled clay in the lower part.

The Frankstown soils are on the lower-lying ridgetops and side slopes. They formed in material weathered from limestone and siltstone. They are deep and very deep and well drained. Permeability is moderate. Typically, the surface layer is brown gravelly silt loam. The subsoil is yellowish brown and strong brown gravelly silt loam in the upper part and strong brown and red gravelly silty clay loam in the lower part.

Of minor extent are Teddy and Pricetown soils on the broader ridgetops, Johnsburg and Robertsville soils on upland flats, and Nolin and Yosemite soils on narrow flood plains.

In most areas this map unit is used for cultivated crops, hay, and pasture. Wooded areas are mainly on the steeper slopes and in low, wet areas.

The soils in this map unit generally are well suited to farming. Most of the soils are suited to cultivated crops. Erosion is the main hazard, and erosion-control measures are needed. The soils are well suited to all of the commonly grown hay and pasture crops.

The soils are well suited to woodland, but few areas are used for timber production.

The soils are suited to most urban uses. The high content of clay, depth to bedrock, and shrink-swell potential are limitations.

Detailed Soil Map Units

The map units delineated on the detailed soil maps represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The contrasting components are mentioned in the map unit descriptions. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Frankstown gravelly silt loam, 6 to 12 percent slopes, is a phase of the Frankstown series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes or associations.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Carpenter-Lenberg complex, 12 to 30 percent slopes, eroded, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map

units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Eden-Culleoka association, 25 to 50 percent slopes, eroded, stony, is an example.

This survey includes *miscellaneous areas.* Such areas have little or no soil material and support little or no vegetation. The Rock outcrop part of Fairmount-Faywood-Rock outcrop complex, 25 to 50 percent slopes, eroded, is an example.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils or miscellaneous areas.

AlB—Allegheny loam, 2 to 6 percent slopes, rarely flooded

This very deep, well drained soil is on gently sloping, slightly convex stream terraces, mainly along the Kentucky River and its tributaries. Individual areas range from about 5 to 25 acres in size.

Typically, the surface layer of this soil is brown loam about 7 inches thick. The subsoil extends to a depth of about 80 inches. It is dark yellowish brown loam in the upper part and strong brown loam in the lower part.

Permeability is moderate. The available water capacity is moderate. Runoff is low. This soil can be easily tilled. The organic matter content of the surface layer is moderate. The root zone is deep. The depth to bedrock is more than 60 inches. The soil is subject to rare flooding in late winter and spring.

Included with this soil in mapping are small areas of Elk, Nolin, and Monongahela soils. Also included are a few areas of Allegheny soils that do not flood. Included soils make up about 5 to 10 percent of this map unit.

Most of the acreage of this Allegheny soil is used for cultivated crops, hay, or pasture. A few areas are used for woodland.

This soil is well suited to all of the commonly grown row crops and small grains. The hazard of erosion is moderate if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Soil quality can be maintained or improved by employing crop residue management, growing green manure crops and cover crops, using no-till planting, and growing grasses and legumes in the cropping sequence. Flooding in winter and early spring may damage small grain cover crops.

This soil is well suited to all of the hay and pasture plants that are commonly grown in the survey area. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is well suited to woodland, but only a few areas are used for timber production. The common trees are yellow-poplar, white oak, red maple, and American elm. Some species preferred for planting are eastern white pine, yellow-poplar, black walnut, and white oak. Plant competition is a management concern. Sites may need to be prepared, weeded, or otherwise managed for the control of undesirable plants.

This soil is poorly suited to most urban uses. The flooding and seepage are limitations affecting sanitary facilities. The flooding is a limitation affecting building site developments. Some limitations can be overcome by proper engineering designs and techniques or by selecting areas not subject to flooding.

This soil is in capability subclass 2e.

AlC2—Allegheny loam, 6 to 12 percent slopes, eroded

This very deep, well drained soil is on sloping, slightly convex stream terraces, mainly along the Kentucky River and its tributaries. Erosion has removed about 25 to 75 percent of the original surface layer. Individual areas range from about 5 to 25 acres in size.

Typically, the surface layer of this soil is yellowish brown loam about 5 inches thick. The subsoil extends to a depth of about 80 inches. It is yellowish brown loam in the upper part and strong brown loam in the lower part.

Permeability is moderate. The available water capacity is moderate. Runoff is medium. This soil can be easily tilled. The organic matter content of the surface layer is moderate. The root zone is deep. The depth to bedrock is 60 inches or more.

Included with this soil in mapping are small areas of Elk, Monongahela, and Nolin soils. Also included are a few areas of Allegheny soils that rarely flood. Included soils make up about 5 to 10 percent of this map unit.

Most of the acreage of this Allegheny soil is used for cultivated crops, hay, or pasture. A few areas are used for woodland.

This soil is suited to all of the commonly grown row crops and small grains. The hazard of erosion is

severe if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Soil quality can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to all of the hay and pasture plants that are commonly grown in the survey area. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is well suited to woodland, but only a few areas are used for timber production. The common trees are yellow-poplar, white oak, red maple, and American elm. Some species preferred for planting are eastern white pine, yellow-poplar, black walnut, and white oak. Plant competition is a management concern. Sites may need to be prepared, weeded, or otherwise managed for the control of undesirable plants.

This soil is suited to most urban uses. The seepage and the slope are limitations affecting sanitary facilities. The slope is a limitation affecting building site developments. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 3e.

BaB—Beasley silt loam, 2 to 6 percent slopes

This deep, well drained, gently sloping soil is on slightly convex ridgetops in the uplands, mainly in the Outer Bluegrass region of the survey area. Individual areas range from about 5 to 150 acres in size.

Typically, the surface layer of this soil is brown silt loam about 8 inches thick. The subsoil extends to a depth of about 28 inches and is strong brown and light olive brown silty clay. The substratum extends to a depth of about 45 inches and is yellowish brown clay. Below this is soft shale bedrock interbedded with thin layers of marl.

Permeability is moderately slow or slow. The available water capacity is high. Runoff is medium. This soil can be easily tilled. The organic matter content of the surface layer is low or moderate. The root zone is deep. The shrink-swell potential is moderate. Soft shale bedrock is at a depth of more than 40 inches.

Included with this soil in mapping are small areas of Garlin, Lowell, and Shrouts soils. Also included are areas of moderately eroded Beasley soils that have a surface layer of silty clay loam. Included soils make up about 10 to 15 percent of this map unit.

Most areas of the Beasley soil are used for cultivated crops, hay, or pasture. A few areas are used for woodland.

This soil is well suited to all of the commonly grown row crops and small grains. Erosion is a moderate hazard if a conventional tillage system is used. Combinations of cropping systems and erosion-control practices are needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Soil quality can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to all of the hay and pasture plants that are commonly grown in the survey area. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is well suited to woodland, but only a few areas are used for timber production. The common trees are white oak, eastern redcedar, white ash, and yellow-poplar. The species preferred for planting include white oak, white ash, Virginia pine, and eastern redcedar. The equipment limitation and plant competition are management concerns. Reforestation may require careful management in order to reduce competition from undesirable plants.

This soil is suited to most urban uses. The moderately slow or slow permeability and depth to bedrock are limitations affecting most sanitary facilities. A high content of clay and the moderate shrink-swell potential are limitations affecting building site developments. Low soil strength is a limitation on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 2e.

BbC2—Beasley silty clay loam, 6 to 12 percent slopes, eroded

This deep, well drained, sloping soil is on slightly convex ridgetops and side slopes in the uplands, mainly in the Outer Bluegrass region of the survey area. Erosion has removed about 25 to 75 percent of

the original surface layer. Individual areas range from about 5 to 195 acres in size.

Typically, the surface layer of this soil is brown silty clay loam about 8 inches thick. The subsoil extends to a depth of about 28 inches. It is strong brown and light olive brown silty clay. The substratum extends to a depth of about 45 inches and is yellowish brown clay. Below this is soft shale bedrock interbedded with thin layers of marl.

Permeability is moderately slow or slow. The available water capacity is moderate or high. Runoff is high. This soil is somewhat difficult to till because the clayey subsoil has been mixed with the surface layer. The organic matter content of the surface layer is low. The root zone is deep. The shrink-swell potential is moderate. Soft shale bedrock is at a depth of 40 inches or more.

Included with this soil in mapping are small areas of Garlin, Lowell, and Shrouts soils. Also included are small areas of severely eroded Beasley soils that have a silty clay surface layer. Included soils make up about 10 to 15 percent of this map unit.

Most areas of this Beasley soil are used for hay or pasture. A few areas are used for cultivated crops.

This soil is suited to all of the commonly grown row crops and small grains. The hazard of erosion is severe if a conventional tillage system is used. Combinations of cropping systems and erosion-control practices are needed to slow runoff and control soil loss. Practices such as contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Soil quality can be maintained or improved by returning crop residue to the soil, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to all of the hay and pasture plants that are commonly grown in the survey area. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is well suited to woodland, but only a few areas are used for timber production. The common trees are white oak, eastern redcedar, yellow-poplar, and hickory. Some of the species preferred for planting are white oak, white ash, Virginia pine, and eastern redcedar. The hazard of erosion, equipment limitation, and plant competition are management concerns. Reforestation may require careful management in order to reduce competition from undesirable plants.

This soil is suited to some urban uses. The moderately slow or slow permeability, the slope, a high content of clay, and the depth to bedrock are limitations affecting most sanitary facilities. The slope, a high content of clay, the depth to bedrock, and the moderate shrink-swell potential are limitations affecting most building site developments. Low soil strength is a limitation on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 3e.

BeB—Berea silt loam, 2 to 6 percent slopes

This moderately deep, moderately well drained, gently sloping soil is on ridgetops in the uplands, mainly in the Knobs region of the survey area. Individual areas range from 5 to 60 acres in size.

Typically, the surface layer of this soil is brown silt loam about 8 inches thick. The subsoil extends to a depth of about 26 inches. It is light olive brown and light yellowish brown silt loam in the upper part and light yellowish brown mottled silt loam in the lower part. Below this is 4 inches of weathered black shale. Below that is hard black shale.

Permeability is moderately slow. The available water capacity is moderate. Runoff is low. This soil can be easily tilled. The organic matter content of the surface layer is low or moderate. The root zone is moderately deep. The shrink-swell potential is moderate. A perched water table is at a depth of 1.5 to 3.0 feet. The depth to bedrock is 20 to 40 inches.

Included with this soil are small areas of Tilsit, Greenbriar, Johnsburg, and Trappist soils. Included soils make up about 5 to 10 percent of the map unit.

Most areas of this soil are used for cultivated crops, hay, or pasture. A few areas are used as woodland.

This soil is well suited to all of the commonly grown row crops and small grains. Because of the wetness, tillage may be delayed in the spring. In some places diversions help to control runoff and overwash from the adjacent hills. Erosion is a moderate hazard if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Soil quality can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to most of the hay and pasture plants that are commonly grown in the survey

area. Some deep-rooted plants may be affected by the wetness. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is suited to woodland, but only a few areas are used for timber production. The common trees are white oak, hickory, yellow-poplar, and Virginia pine. Some of the species preferred for planting are eastern white pine, shortleaf pine, white oak, yellow-poplar, and sweetgum. Plant competition is a management concern. Reforestation may require careful management in order to reduce competition from undesirable plants.

This soil is suited to some urban uses. The wetness, the moderately slow permeability, and the depth to bedrock are limitations affecting some sanitary facilities. The wetness and the depth to bedrock are limitations affecting most building site developments. Low soil strength is a limitation on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 2e.

Bo—Boonesboro silt loam, frequently flooded

This moderately deep, well drained, nearly level soil is on flood plains, mainly in the Inner Bluegrass, Outer Bluegrass, and Hills of the Bluegrass regions of the survey area. Slopes range from 0 to 2 percent. Individual areas range from about 5 to 35 acres in size.

Typically, the surface layer of this soil is dark brown silt loam about 7 inches thick. The subsoil extends to a depth of about 32 inches. It is brown and dark brown gravelly silt loam. The substratum is dark yellowish brown gravelly silty clay loam to a depth of about 37 inches. Below this is limestone bedrock.

Permeability is moderately rapid. The available water capacity is high. Surface runoff is negligible. This soil is easy to till. The organic matter content of the surface layer is moderate or high. The root zone is moderately deep. Limestone bedrock is at a depth of 20 to 40 inches. This soil is subject to frequent flooding for brief duration during late winter and early spring.

Included with this soil in mapping are small areas of Newark, Nolin, and Skidmore soils. Also included are areas adjacent to streambanks that have slopes of 2 to 12 percent. Included soils make up about 10 to 15 percent of this map unit.

Most areas of this Boonesboro soil are used for cultivated crops, hay, or pasture. Areas along streambanks are mostly used as woodland.

This soil is suited to most of the commonly grown row crops. Flooding can damage small grains. Corn should be planted later in the growing season when the hazard of flooding has diminished. Soil quality can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to pasture and hay plants that are commonly grown in the survey area. Flooding, however, can damage some hay crops. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is well suited to woodland, but only a few areas are used for timber production. The common trees are yellow-poplar, river birch, black willow, and American sycamore. Some of the species preferred for planting are eastern cottonwood, sweetgum, black walnut, yellow-poplar, and eastern white pine. The main concerns in woodland management are plant competition and seedling mortality. Reforestation may require careful management in order to reduce competition from undesirable plants.

This soil is poorly suited to most urban uses because of the flooding, depth to bedrock, and low soil strength. Some limitations can be overcome by proper engineering designs and techniques and by selecting areas not subject to flooding.

This soil is in capability subclass 2w.

CaE2—Caneyville silt loam, 12 to 30 percent slopes, eroded, rocky

This moderately deep, well drained, moderately steep and steep soil is on convex hillsides on uplands, mainly in southwestern Lincoln County. Limestone ledges and scattered areas of exposed bedrock cover about 0.1 to 2.0 percent of the surface. Erosion has removed about 25 to 75 percent of the original surface layer. Individual areas range from about 10 to 50 acres in size.

Typically, the surface layer of this soil is brown silt loam about 3 inches thick. The subsoil extends to a depth of about 36 inches. It is strong brown silty clay loam in the upper part and yellowish red and strong brown silty clay in the lower part. Below this is limestone bedrock.

Permeability is slow. The available water capacity is moderate. Runoff is very high. The content of organic matter in the surface layer is moderate. The root zone

is moderately deep. The shrink-swell potential is moderate. The depth to bedrock is 20 to 40 inches.

Included with this soil in mapping are small areas of Christian and Frankstown soils. Also included are small areas of soils that are similar to the Caneyville soil but are more than 40 inches deep to bedrock and a few areas of Caneyville soils that have slopes of more than 30 percent. Included soils make up about 10 to 15 percent of this map unit.

Most areas of this Caneyville soil are used for woodland. A few areas are used for hay or pasture.

This soil is unsuited to cultivated crops because of the slope, depth to bedrock, and rock outcrops.

This soil is suited to all of the hay and pasture plants that are commonly grown in the county. The equipment limitation caused by the rock outcrops and the slope are management concerns. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is suited to woodland. The common trees are black oak, sugar maple, and eastern redcedar. The species preferred for planting on cool aspects include white ash, yellow-poplar, eastern white pine, and northern red oak. Those on warm aspects include eastern redcedar, Virginia pine, and white oak. The hazard of erosion, equipment limitation, and plant competition are management concerns on cool and warm aspects. Seedling mortality is an additional management concern on warm aspects. Steep skid trails and roads are subject to washing and gullying unless protected by water bars, plant cover, or both. Reforestation may require careful management in order to reduce competition from undesirable plants.

This soil is unsuited to most urban uses because of the slope, the low soil strength, the depth to bedrock, the slow permeability, and a high content of clay. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 6s.

CeB—Carpenter gravelly silt loam, 2 to 6 percent slopes

This deep and very deep, well drained soil is on gently sloping, slightly convex footslopes and the narrow tops of low ridges in the uplands, mainly in the Knobs region of the survey area. Individual areas range from about 5 to 50 acres in size.

Typically, the surface layer of this soil is dark yellowish brown gravelly silt loam about 7 inches thick. The subsurface layer is yellowish brown gravelly silt loam to a depth of 12 inches. The subsoil extends to a depth of about 42 inches and is strong brown gravelly silty clay loam. The substratum, to a depth of about 52 inches, is yellowish brown mottled channery silty clay. Below this is soft shale bedrock.

Permeability is moderate in the subsoil and slow in the substratum. This soil has a high available water capacity. Runoff is low. The soil can be easily tilled. The content of organic matter in the surface layer is low or moderate. The root zone is deep or very deep. The shrink-swell potential is moderate in the substratum. The depth to soft shale bedrock is 40 to more than 80 inches.

Included with this soil in mapping are small areas of Colyer, Lenberg, and Trappist soils. Also included are areas of Carpenter soils that are moderately eroded. Included soils make up about 5 to 10 percent of this map unit.

Most areas of this Carpenter soil are used for cultivated crops, hay, or pasture. A few areas are used as woodland.

This soil is well suited to all of the commonly grown row crops and small grains. The hazard of erosion is moderate if a conventional tillage system is used. Combinations of cropping systems and erosion-control practices are needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Soil quality can be maintained and improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to all of the hay and pasture plants that are commonly grown in the county. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is well suited to woodland, but only a few areas are used for timber production. The common trees are white oak, Virginia pine, and chestnut oak. The species preferred for planting include yellow-poplar, white oak, black walnut, and shortleaf pine. Plant competition is a management concern. Proper site preparation, weed control, or other management may be needed to control undesirable plants.

This soil is suited to most urban uses. The slow permeability in the substratum, the depth to bedrock, and a high content of clay are limitations affecting most sanitary facilities. Low soil strength is a limitation

on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 2e.

CeC—Carpenter gravelly silt loam, 6 to 12 percent slopes

This deep and very deep, well drained soil is on sloping, slightly convex footslopes and the narrow tops of low ridges in the uplands, mainly in the Knobs region of the survey area. Individual areas range from about 5 to 50 acres in size.

Typically, the surface layer of this soil is dark yellowish brown gravelly silt loam about 7 inches thick. The subsurface layer is yellowish brown gravelly silt loam to a depth of 12 inches. The subsoil extends to a depth of about 42 inches and is strong brown gravelly silty clay loam. The substratum, to a depth of about 52 inches, is yellowish brown mottled channery silty clay. Below this is soft shale bedrock.

Permeability is moderate in the subsoil and slow in the substratum. This soil has a high available water capacity. Runoff is medium. The soil can be easily tilled. The content of organic matter in the surface layer is low or moderate. The root zone is deep or very deep. The shrink-swell potential is moderate in the substratum. The depth to soft shale bedrock is 40 to more than 80 inches.

Included with this soil in mapping are small areas of Lenberg, Colyer, and Trappist soils. Also included are a few areas of Carpenter soils that are moderately eroded. Included soils make up about 5 to 15 percent of this map unit.

Most of the acreage of this Carpenter soil is used for cultivated crops, hay, or pasture. A few areas are used as woodland.

This soil is suited to all of the commonly grown row crops and small grains. The hazard of erosion is severe if a conventional tillage system is used. Combinations of cropping systems and erosion-control practices are needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Soil quality can be maintained and improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to all of the hay and pasture plants that are commonly grown in the county. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is well suited to woodland, but only a few areas are used for timber production. The common trees are white oak, Virginia pine, and chestnut oak. The species preferred for planting include yellow-poplar, white oak, black walnut, and shortleaf pine. Plant competition is a management concern. Proper site preparation, weed control, or other management may be needed to control undesirable plants.

This soil is suited to most urban uses. The slow permeability in the substratum and the depth to bedrock are limitations affecting most sanitary facilities. The slope is a limitation affecting building site developments. The low soil strength and the slope are limitations on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 3e.

CgE2—Carpenter-Lenberg complex, 12 to 30 percent slopes, eroded

This map unit consists of very deep to moderately deep, well drained, moderately steep and steep soils. It is on footslopes and hillsides in the uplands, mainly in the Knobs and Pennyroyal regions of the survey area. The Carpenter soil is on concave hillsides, and the Lenberg soil is on the upper parts of convex hillsides. Erosion has removed about 25 to 75 percent of the original surface layer. The Carpenter and Lenberg soils occur as areas so closely intermingled that they could not be separated at the scale used for mapping. Individual areas range from about 50 to 1,000 acres in size. Carpenter and similar soils make up about 50 percent of the map unit, and Lenberg and similar soils make up about 35 percent.

Typically, the surface layer of this Carpenter soil is yellowish brown gravelly silt loam about 5 inches thick. The subsurface layer is yellowish brown gravelly silt loam to a depth of 12 inches. The subsoil extends to a depth of about 42 inches and is strong brown gravelly silty clay loam. The substratum, to a depth of about 52 inches, is yellowish brown mottled channery silty clay. Below this is soft shale bedrock.

Permeability of the Carpenter soil is moderate in the subsoil and slow in the substratum. This soil has a high available water capacity. Runoff is high. This soil can be easily tilled. The content of organic matter in the surface layer is low or moderate. The root zone is deep or very deep. The shrink-swell potential is moderate in the substratum. The depth to soft shale bedrock is 40 to more than 80 inches.

Typically, the surface layer of this Lenberg soil is

brown silt loam about 5 inches thick. The subsoil extends to a depth of about 39 inches. In the upper part, it is yellowish brown and strong brown mottled silty clay. In the lower part, it is olive gray mottled silty clay and channery silty clay. Below this is soft shale bedrock.

Permeability of the Lenberg soil is moderately slow. The available water capacity is moderate. Runoff is high. This soil can easily be tilled. The organic matter content of the surface layer is low or moderate. The root zone is moderately deep. The shrink swell potential is moderate. The depth to soft shale bedrock is 20 to 40 inches.

Included with these soils in mapping are small areas of Garmon and Trappist soils. Also included are a few areas of Carpenter soils that have slopes of less than 12 percent. Included soils make up about 10 to 15 percent of this map unit.

Most of the acreage of the Carpenter and Lenberg soils is used for woodland and pasture. These soils are generally not suited to cultivated crops because of the slope and depth to bedrock.

These soils are poorly suited to hay and pasture. The slope limits the use of equipment in establishing and maintaining plants. Grasses and legumes that provide adequate forage and ground cover are needed. Restricting use during wet periods, proper stocking rates, rotational grazing, and weed control help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

These soils are suited to woodland. The common trees are Virginia pine, chestnut oak, and white oak. The species preferred for planting on the cool aspects of the Carpenter soil include yellow-poplar, black walnut, and eastern white pine, and those on warm aspects include shortleaf pine and white oak. The species preferred for planting on the Lenberg soil include shortleaf pine, Virginia pine, and white oak. The hazard of erosion, the equipment limitation, seedling mortality, and plant competition are management concerns on the Carpenter soil. The hazard of erosion, the equipment limitation, and plant competition are management concerns on the Lenberg soil. Steep skid trails and roads are subject to rilling and gullying unless water bars, plant cover, or both protect them. These soils are subject to slumping when saturated, especially where road cuts are made. The slope may limit the use of wheeled and tracked equipment. Reforestation may require careful management in order to reduce competition from undesirable plants.

These soils are poorly suited to most urban uses because of the slope, the depth to bedrock, the shrink-swell potential, a high content of clay, and low soil strength. Some limitations can be overcome by proper engineering designs and techniques.

These soils are in capability subclass 6e.

ChB—Chenault gravelly silt loam, 2 to 6 percent slopes

This deep and very deep, well drained, gently sloping soil is on slightly convex ridgetops on old high terraces, mainly along the Dix River. Many areas are karst, with sinkholes or depressions covering 0.25 acre to 2.0 acres. Individual areas range from about 5 to 35 acres in size.

Typically, the surface layer of this soil is dark yellowish brown gravelly silt loam about 7 inches thick. The subsoil extends to a depth of about 48 inches. It is dark yellowish brown and strong brown gravelly silty clay loam. The substratum, to a depth of 58 inches, is yellowish brown mottled gravelly silty clay. Below this is limestone bedrock.

Permeability is moderate in the subsoil and moderately slow in the substratum. The available water capacity is high. Runoff is low. This soil can be easily tilled. The organic matter content of the surface layer is moderate. The root zone is deep or very deep. The shrink-swell potential is moderate in the substratum. Limestone bedrock is at a depth of 40 to 80 inches.

Included with this soil in mapping are small areas of Faywood, Lowell, and Sandview soils. Also included are a few areas of severely eroded Chenault soils that have a surface layer of gravelly silty clay loam. Included soils make up about 10 to 15 percent of the map unit.

Most areas of this Chenault soil are used for cultivated crops, hay, and pasture.

This soil is well suited to cultivated crops and small grains. Pebbles and rock fragments in the surface layer may interfere with tillage equipment. The hazard of erosion is moderate if a conventional tillage system is used. Combinations of cropping systems and erosion-control practices are needed to slow runoff and control soil erosion. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Soil quality can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to all of the hay and pasture plants that are commonly grown in the survey area. Restricting use during wet periods, proper stocking

rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is well suited to woodland, but only a few areas are used for timber production. The common trees are yellow-poplar, upland oaks, and sugar maple. Some of the species preferred for planting are yellow-poplar, black walnut, and white oak. Plant competition is a management concern. Proper site preparation, weed control, or other management practices may be needed to control undesirable plants.

This soil is suited to most urban uses. The depth to bedrock, moderately slow permeability in the substratum, and seepage are limitations affecting most sanitary facilities. The depth to bedrock and a high content of clay are limitations affecting building site developments. Low soil strength is a limitation on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 2e.

ChC—Chenault gravelly silt loam, 6 to 12 percent slopes

This very deep and deep, well drained, sloping soil is on ridgetops on old high terraces, mainly along the Dix River. Many areas are karst, with sinkholes or depressions covering 0.25 acre to 2.0 acres. Individual areas range from about 5 to 55 acres in size.

Typically, the surface layer of this soil is dark yellowish brown gravelly silt loam about 7 inches thick. The subsoil extends to a depth of about 48 inches and is dark yellowish brown and strong brown gravelly silty clay loam. The substratum, to a depth of about 58 inches, is yellowish brown gravelly silty clay. Below this is limestone bedrock.

Permeability is moderate in the subsoil and moderately slow in the substratum. The available water capacity is high. Runoff is medium. This soil can be easily tilled. The organic matter content of the surface layer is moderate. The root zone is deep or very deep. The shrink-swell potential is moderate in the substratum. Limestone bedrock is at a depth of 40 to 80 inches.

Included with this soil in mapping are small areas of Faywood, Lowell, and Sandview soils. Included soils make up about 10 to 15 percent of the map unit.

Most areas of this Chenault soil are used for row crops, hay, or pasture. A few areas are used as woodland.

This soil is suited to all of the commonly grown row crops and small grains (fig. 13). Pebbles and rock fragments in the surface layer may interfere with tillage equipment. The hazard of erosion is severe if a conventional tillage system is used. Combinations of cropping systems and erosion-control practices are needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Soil quality can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to all of the hay and pasture plants that are commonly grown in the survey area. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is well suited to woodland, but few areas are used for timber production. The common trees are yellow-poplar, upland oaks, and sugar maple. Some of the species preferred for planting are yellow-poplar, black walnut, and white oak. The main concern in woodland management is plant competition. Reforestation may require careful management in order to reduce competition from undesirable plants.

This soil is suited to most urban uses. The depth to bedrock, the slope, the moderately slow permeability in the substratum, and the seepage are limitations affecting some sanitary facilities. The slope, the depth to bedrock, and a high content of clay are limitations affecting building site developments. Low soil strength is a limitation on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 3e.

CkC—Chenault-Lowell complex, phosphatic, 6 to 12 percent slopes

These very deep and deep, well drained, sloping soils are on ridgetops and side slopes on old high terraces, mainly along the Dix River. Most areas are karst, with sinkholes or depressions covering 0.25 acre to 2.5 acres. Individual areas range from 5 to 35 acres in size. Chenault and similar soils make up about 60 percent of the map unit, and Lowell and similar soils make up about 30 percent.

Typically, the surface layer of this Chenault soil is dark yellowish brown gravelly silt loam about 7 inches thick. The subsoil extends to a depth of about 48 inches and is dark yellowish brown and strong brown gravelly silty clay loam. The substratum, to a depth of about 58 inches, is yellowish brown gravelly silty clay. Below this is limestone bedrock.

Figure 13.—Cropland in an area of Chenault gravelly silt loam, 6 to 12 percent slopes.

Permeability of the Chenault soil is moderate in the subsoil and moderately slow in the substratum. The available water capacity is high. Runoff is medium. This soil can be easily tilled. The organic matter content of the surface layer is moderate. The root zone is deep or very deep. In some areas this soil is high in phosphates. The shrink-swell potential is moderate in the substratum. The depth to limestone bedrock is 40 to 80 inches.

Typically, the surface layer of this Lowell soil is brown silt loam about 6 inches thick. The subsoil extends to a depth of about 52 inches. The upper part of the subsoil is dark yellowish brown silty clay. The middle part is strong brown clay. The lower part is dark yellowish brown clay. Below this is limestone bedrock.

Permeability of the Lowell soil is moderately slow. The available water capacity is high. Runoff is medium. This soil can be easily tilled. The content of organic matter in the surface layer is low or moderate. The root zone is deep or very deep. In some areas this soil is high in phosphates. The shrink-swell potential is moderate. The depth to bedrock is 40 to 80 inches.

Included with these soils in mapping are small areas of Faywood, Cynthiana, and Fairmount soils. Included soils make up about 10 to 20 percent of this map unit.

Most areas of the Chenault and Lowell soils are used for cultivated crops, hay, or pasture. A few areas are used for woodland.

These soils are suited to all of the commonly grown row crops and small grains. The hazard of erosion is moderate if a conventional tillage system is used. Combinations of cropping systems and erosion-control practices are needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Soil quality can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

These soils are well suited to all of the hay and pasture plants that are commonly grown in the survey area. The natural phosphate content of these soils makes the grass ideally suited to race horses. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

These soils are well suited to woodland, but only a few areas are used for timber production. The common trees are upland oaks, eastern redcedar, and sugar maple. Some of the species preferred for planting include white oak, eastern white pine, and northern

red oak. Plant competition is the main management concern. Proper site preparation, weed control, or other management practices may be needed to control undesirable plants.

These soils are suited to some urban uses. The depth to bedrock, the slow permeability, and the slope are limitations affecting most sanitary facilities. The depth to bedrock, the slope, and a high content of clay are limitations affecting most building site developments. Low soil strength and the slope are limitations on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

These soils are in capability subclass 3e.

ClD2—Chenault-Faywood complex, phosphatic, 12 to 25 percent slopes, eroded, rocky

These very deep, deep, and moderately deep, well drained, moderately steep and steep upland soils are on slightly convex ridgetops on high terraces, mainly along the Dix River. Most areas are karst, with sinkholes or depressions covering 0.25 acre to 2.5 acres. Limestone outcrops make up 0.1 to 2.0 percent of the surface. Erosion has removed about 25 to 75 percent of the original surface layer. Individual areas range from about 5 to 35 acres in size. Chenault and similar soils make up about 50 percent of the complex, and Faywood and similar soils make up about 30 percent.

Typically, the surface layer of this Chenault soil is yellowish brown gravelly silt loam about 5 inches thick. The subsoil extends to a depth of about 48 inches and is dark yellowish brown and strong brown gravelly silty clay loam. The substratum, to a depth of about 58 inches, is yellowish brown gravelly silty clay. Below this is limestone bedrock.

Permeability of the Chenault soil is moderate in the subsoil and moderately slow in the substratum. The available water capacity is high. This soil can be easily tilled. The organic matter content of the surface layer is moderate. The root zone is deep or very deep. In some areas this soil is high in phosphates. The shrink-swell potential is moderate in the substratum. Runoff is high. Limestone bedrock is at a depth of 40 to 80 inches.

Typically, the surface layer of this Faywood soil is brown silty clay loam about 6 inches thick. The subsoil extends to a depth of about 30 inches. It is dark yellowish brown silty clay in the upper part and yellowish brown and light olive brown clay in the lower part. Below this is limestone bedrock.

Permeability of the Faywood soil is slow. The available water capacity is moderate. Surface runoff is high. This soil is somewhat difficult to till because the clayey subsoil has been mixed with the surface layer. The organic matter content in the surface layer is low. The root zone is moderately deep. In some areas this soil is high in phosphates. The shrink-swell potential is moderate. The depth to limestone bedrock is 20 to 40 inches.

Included with these soils in mapping are small areas of Lowell phosphatic, Cynthiana, and Fairmount soils. Included soils make up about 15 to 20 percent of this map unit.

Most areas of the Chenault and Faywood soils are used for hay, pasture, and woodland. A few areas are used for row crops.

These soils are poorly suited to most cultivated crops because of the slope and rock outcrops. The hazard of erosion is very severe if a conventional tillage system is used. Combinations of cropping systems and erosion-control practices are needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Soil quality can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

These soils are suited to all of the hay and pasture plants that are commonly grown in the survey area. The natural phosphate content of these soils makes the grass ideally suited to race horses. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

These soils are well suited to woodland, but only a few areas are used for timber production. The common trees are upland oaks, eastern redcedar, and sugar maple. Some of the species preferred for planting are white oak, eastern white pine, and yellow-poplar. Plant competition is a management concern in areas of the Chenault soil. The hazard of erosion, the equipment limitation, and plant competition are management concerns in areas of the Faywood soil. Steep skid trails and roads are subject to washing and gullying unless protected by water bars, plant cover, or both. The slope restricts the use of some equipment. Proper site preparation, weed control, or other management may be needed to control undesirable plants.

These soils are poorly suited to urban uses. The depth to bedrock, rock outcrops, the slow permeability, and the slope are limitations affecting most sanitary facilities. The depth to bedrock, rock outcrops, the

shrink-swell potential, and the slope are limitations affecting most building site developments. Low soil strength and the slope are limitations on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

These soils are in capability subclass is 4s.

CmB—Christian silt loam, 2 to 6 percent slopes

This very deep, well drained, gently sloping soil is on slightly convex ridgetops in the uplands, mainly in the Pennyroyal region of the survey area. Individual areas range from about 3 to 175 acres in size.

Typically, the surface layer of this soil is dark yellowish brown silt loam about 8 inches thick. The subsoil extends to a depth of about 90 inches. It is yellowish brown silty clay loam in the upper part, red silty clay in the middle part, and red mottled clay in the lower part.

Permeability is moderately slow. The available water capacity is high. Runoff is medium. This soil can be easily tilled. The organic matter content of the surface layer is low or moderate. The root zone is very deep. The shrink-swell potential is moderate. The depth to bedrock is more than 72 inches.

Included with this soil in mapping are small areas of Frankstown, Pricetown, and Teddy soils. Also included are a few small areas of Christian soils that are eroded and have a surface layer of silty clay loam and areas of Christian soils that have a surface layer of gravelly silt loam. Included soils make up about 5 to 10 percent of this map unit.

Most areas of this Christian soil are used for cultivated crops, hay, or pasture. A few areas are used as woodland.

This soil is well suited to all of the commonly grown row crops and small grains. The hazard of erosion is moderate if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Soil quality can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to all of the hay and pasture plants that are commonly grown in the survey area. Restricting use when the soil is wet, proper stocking rates, and rotation grazing help to maintain grassland and soil tilth. Pasture renovation should be frequent enough to maintain the desired plants.

This soil is well suited to woodland, but only a few areas are used for timber production. The common trees are black oak, white oak, Virginia pine, and yellow-poplar. Some of the species preferred for planting are yellow-poplar, eastern white pine, shortleaf pine, and white oak. The main concern in woodland management is plant competition. Proper site preparation, weed control, or other management may be needed to control undesirable plants.

This soil is suited to most urban uses. The moderately slow permeability and a high content of clay are limitations affecting most sanitary facilities. The high content of clay and the shrink-swell potential are limitations affecting most building site developments. Low soil strength and the shrink-swell potential are limitations on sites for local roads and streets. Some limitations may be overcome by proper engineering designs and techniques.

This soil is in capability subclass 2e.

CmC2—Christian silt loam, 6 to 12 percent slopes, eroded

This very deep, well drained, sloping soil is on ridgetops and side slopes in the uplands, mainly in the Pennyroyal region of the survey area. Individual areas range from about 3 to 175 acres in size.

Typically, the surface layer of this soil is yellowish brown silt loam about 5 inches thick. The subsoil extends to a depth of about 90 inches. It is yellowish brown silty clay loam in the upper part, red silty clay in the middle part, and red mottled clay in the lower part.

Permeability is moderately slow. The available water capacity is high. Runoff is high. This soil can be easily tilled. The organic matter content of the surface layer is low or moderate. The root zone is deep. The shrink-swell potential is moderate. The depth to bedrock is more than 72 inches.

Included with this soil in mapping are small areas of Caneyville, Frankstown, and Pricetown soils. Also included are a few small areas of Christian soils that are severely eroded and have a surface layer of silty clay loam and areas of Christian soils that have a surface layer of gravelly silt loam. Included soils make up about 5 to 10 percent of this map unit.

Most areas of this Christian soil are used for cultivated crops, hay, or pasture. A few areas are used as woodland.

This soil is suited to cultivated crops and small grains. The hazard of erosion is severe if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and

Figure 14.—A grassed waterway and hay in an area of Christian silt loam, 6 to 12 percent slopes, eroded.

conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Soil quality can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to all of the hay and pasture plants that are commonly grown in the survey area (fig 14). Restricting use when the soil is wet, proper stocking rates, and rotation grazing help to maintain grassland and soil tilth. Pasture renovation should be frequent enough to maintain the desired plants.

This soil is well suited to woodland, but only a few areas are used for timber production. The common trees are black oak, white oak, eastern redcedar, and yellow-poplar. Some of the species preferred for planting are yellow-poplar, eastern white pine, northern red oak, and white oak. Plant competition is a management concern. Reforestation may require careful management to reduce competition from undesirable plants.

This soil is poorly suited to most urban uses. The slope, the moderately slow permeability, and a high content of clay are limitations affecting most sanitary facilities. The high content of clay, the slope, and the shrink-swell are potential limitations affecting most building site developments. Low soil strength and the shrink-swell potential are limitations on sites for local roads and streets. Some limitations may be overcome by proper engineering designs and techniques.

This soil is in capability subclass 3e.

CoD2—Christian silty clay loam, 12 to 25 percent slopes, eroded

This very deep, well drained, moderately steep soil is on ridgetops and side slopes, mainly in the Pennyroyal region of the survey area. Erosion has removed about 25 to 75 percent of the original surface layer. Individual areas range from about 5 to 130 acres in size.

Typically, the surface layer of this soil is yellowish brown silty clay loam about 6 inches thick. The subsoil extends to a depth of about 90 inches. It is yellowish red silty clay in the upper part, red silty clay in the middle part, and red mottled clay in the lower part.

Permeability is moderately slow. The available water capacity is high. This soil is somewhat difficult to till because the clayey subsoil has been mixed with the surface layer. The organic matter content of the surface layer is low. The root zone is very deep. Runoff is high. The shrink-swell potential is moderate. The depth to bedrock is more than 72 inches.

Included with this soil in mapping are small areas of Caneyville, Frankstown, and Garmon soils. Also included are small areas of Christian soils that are not eroded. Included soils make up about 10 to 15 percent of this map unit.

Most areas of this Christian soil are used for hay, pasture, or woodland. A few areas are used for cultivated crops.

This soil is poorly suited to most cultivated crops because of the slope. The hazard of erosion is very severe if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Soil quality can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is suited to all of the hay and pasture plants that are commonly grown in the survey area. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is well suited to woodland, but only a few areas are used for timber production. The common trees are black oak, white oak, eastern redcedar, and yellow-poplar. Some of the species preferred for planting are yellow-poplar, eastern white pine, shortleaf pine, northern red oak, and white oak. The hazard of erosion, the equipment limitation, and plant competition are management concerns. Steep skid trails and roads are subject to washing and gullying unless water bars or vegetation protects them. The slope and the high content of clay may limit the use of some equipment. Proper site preparation, weed control, or other management may be needed to control undesirable plants.

This soil is poorly suited to most urban uses because of the slope, shrink-swell potential, and low soil strength. Some limitations may be overcome by proper engineering designs and techniques.

This soil is in capability subclass 4e.

CpF2—Colyer-Trappist complex, 25 to 60 percent slopes, eroded, very rocky

This map unit consists of shallow and moderately deep, well drained, steep and very steep soils on narrow ridgetops and side slopes in the uplands, mainly in the Knobs region of the survey area. The Colyer soil is on narrow ridgetops and convex side slopes, and the Trappist soil is on the lower part of concave side slopes. Erosion has removed about 25 to 75 percent of the original surface layer. Shale rock outcrops cover about 2 to 10 percent of the surface. The Colyer and Trappist soils occur as areas so closely intermingled that they could not be separated at the scale used for mapping. Individual areas range from about 40 to 500 acres in size. Colyer and similar soils make up about 50 percent of this complex, and Trappist and similar soils make up about 30 percent.

Typically, the surface layer of this Colyer soil is dark grayish brown silty clay loam about 9 inches thick. The subsoil extends to a depth of about 14 inches and is yellowish brown very channery silty clay. Below this is hard black shale bedrock.

Permeability of the Colyer soil is slow. The available water capacity is very low. The organic matter content of the surface layer is low. The root zone is shallow, and root penetration may be restricted by the high content of rock fragments. Runoff is very high. The depth to hard bedrock is 8 to 20 inches.

Typically, the surface layer of this Trappist soil is brown silty clay loam about 7 inches thick. The subsoil extends to a depth of about 26 inches. It is strong brown and brown silty clay in the upper part and brown channery silty clay in the lower part. The substratum extends to a depth of about 35 inches and is variegated brown, yellowish red, and pale brown very channery silty clay. Below this is hard black shale bedrock.

Permeability of the Trappist soil is slow. The available water capacity is moderate. Runoff is very high. The organic matter content of the surface layer is low or moderate. The root zone is moderately deep. The shrink-swell potential is moderate. The depth to hard bedrock is 20 to 40 inches.

Included with these soils in mapping are small areas of Carpenter, Garmon, and Lenberg soils. Included soils make up about 15 to 20 percent of this map unit.

Most of the areas of the Colyer and Trappist soils

are used for woodland. A few areas are used for pasture.

These soils are not suited to cultivated crops and hay and are poorly suited to pasture. The slope, the depth to bedrock, and rock outcrops are the main limitations.

These soils are suited to woodland. The common trees are Virginia pine, chestnut oak, and scarlet oak. Some species preferred for planting on the Colyer soil are Virginia pine and shortleaf pine. Some species preferred for planting on the Trappist soil are Virginia pine and white oak. The hazard of erosion, equipment limitation, and plant competition are management concerns in areas of both soils. Seedling mortality is also a management concern on the Colyer soil. Steep skid trails and roads are subject to washing and gullying unless protected by water bars, plant cover, or both. The slope can limit the use of some types of equipment. Reforestation may require careful management to ensure the survival of seedlings and to reduce competition from undesirable understory plants.

These soils are poorly suited to most urban uses because of the slope, the depth to bedrock, slow permeability, low soil strength, and a high content of clay.

These soils are in capability subclass 7s.

CrB—Crider silt loam, 2 to 6 percent slopes

This very deep, well drained, gently sloping soil is on wide, slightly convex ridgetops in the uplands, mainly in the Outer Bluegrass region of the survey area. Individual areas range from about 5 to 100 acres in size.

Typically, the surface layer of this soil is brown silt loam about 8 inches thick. The subsoil extends to a depth of about 64 inches. It is dark yellowish brown and strong brown silt loam and silty clay loam in the upper part and yellowish red mottled silty clay in the lower part.

Permeability is moderate. The available water capacity is high. Runoff is low. This soil can be easily tilled. The organic matter content of the surface layer is moderate. The root zone is very deep. The shrink-swell potential is moderate in the lower part of the subsoil. The depth to bedrock is more than 60 inches.

Included with this soil in mapping are small areas of Greenbriar, Hagerstown, Lowell, and Sandview soils. Included soils make up 5 to 10 percent of this map unit.

Most areas of this Crider soil are used for cultivated crops or hay. A few areas are used for pasture.

This soil is well suited to all of the commonly grown row crops and small grains. The hazard of erosion is moderate if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Soil quality can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to all of the hay and pasture plants that are commonly grown, especially alfalfa. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is well suited to woodland, but only a few areas are used for timber production. The common trees are upland oaks, sugar maple, and black walnut. Some of the species preferred for planting are black walnut, yellow-poplar, white oak, and northern red oak. Plant competition is the main management concern. Proper site preparation, weed control, or other management may be needed to control undesirable plants.

This soil is well suited to most urban uses. Seepage and a high content of clay are limitations affecting some sanitary facilities. Low soil strength is a limitation on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 2e.

CrC—Crider silt loam, 6 to 12 percent slopes

This deep, well drained, sloping soil is on ridgetops and side slopes in the uplands, mainly in the Outer Bluegrass region of the survey area. Individual areas range from 5 to 75 acres in size.

Typically, the surface layer of this soil is brown silt loam about 8 inches thick. The subsoil extends to a depth of about 64 inches. It is dark yellowish brown and strong brown silt loam and silty clay loam in the upper part and yellowish red mottled silty clay in the lower part.

Permeability is moderate. The available water capacity is high. Runoff is medium. This soil can be easily tilled. The organic matter content of the surface layer is moderate. The root zone is very deep. The shrink-swell potential is moderate in the lower part of

the subsoil. The depth to bedrock is more than 60 inches.

Included with this soil in mapping are small areas of Hagerstown, Lowell, and Sandview soils. Also included are a few areas of Crider soils that are eroded. Included soils make up about 10 percent of this map unit.

Most areas of this Crider soil are used for cultivated crops, hay, or pasture.

This soil is suited to cultivated crops and small grains. The hazard of erosion is severe if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Soil quality can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to hay and pasture crops that are commonly grown in the survey area, especially alfalfa. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is well suited to woodland, but only a few areas are used for timber production. The common trees are upland oaks, white ash, sugar maple, and black walnut. Some of the species preferred for planting are eastern white pine, black oak, white oak, yellow-poplar, black walnut, white ash, and northern red oak. Plant competition is the main management concern. Proper site preparation, weed control, or other management may be needed to control undesirable plants.

This soil is suited to most urban uses. The slope, seepage, and a high content of clay are limitations affecting some sanitary facilities. The slope and a high content of clay are limitations affecting building site developments. Low soil strength and the slope are limitations on sites for local roads and streets. Some limitations may be overcome by proper engineering designs and techniques.

This soil is in capability subclass 3e.

CuB—Culleoka silt loam, 2 to 6 percent slopes

This moderately deep, well drained, gently sloping soil is on narrow ridgetops in the uplands, mainly in the Hills of the Bluegrass region of the survey area. Individual areas range from 5 to 75 acres in size.

Typically, the surface layer of this soil is dark brown silt loam about 7 inches thick. The subsurface layer, to a depth of 12 inches, is dark yellowish brown silt loam. The subsoil extends to a depth of about 38 inches. It is yellowish brown channery and very channery silty clay loam. Below this is siltstone bedrock.

Permeability is moderate or moderately rapid. The available water capacity is moderate. Runoff is low. This soil can be easily tilled. The organic matter content of the surface layer is moderate. The root zone is moderately deep. The depth to bedrock is 20 to 40 inches.

Included with this soil in mapping are small areas of Eden, Lowell, and Nicholson soils. Also included are a few areas of Culleoka soils that are eroded. Included soils make up about 5 to 10 percent of this map unit.

Most areas of this Culleoka soil are used for cultivated crops, hay, or pasture. A few areas are used as woodland.

This soil is well suited to cultivated crops and small grains. The hazard of erosion is moderate if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Soil quality can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to all of the hay and pasture plants that are commonly grown in the survey area. Restricting use when the soil is wet, proper stocking, and rotational grazing help to maintain grassland and soil tilth. Pasture renovation should be frequent enough to maintain the desired plants.

This soil is well suited to woodland, but only a few areas are used for timber production. The common trees are yellow-poplar, upland oaks, and black cherry. Some of the species preferred for planting are white oak, yellow-poplar, and eastern white pine. Plant competition is a management concern. Proper site preparation, weed control, or other management may be needed to control undesirable plants.

This soil is suited to some urban uses. The depth to bedrock and seepage are limitations affecting most sanitary facilities. The depth to bedrock is a limitation affecting some types of building site development. Low soil strength is a limitation on sites for local roads and streets. Some limitations may be overcome by proper engineering designs and techniques.

This soil is in capability subclass 2e.

CuC2—Culleoka silt loam, 6 to 12 percent slopes, eroded

This moderately deep, well drained, sloping soil is on narrow ridgetops and upper side slopes in the uplands, mainly in the Hills of the Bluegrass region of the survey area. Individual areas range from 5 to 75 acres in size.

Typically, the surface layer of this soil is brown silt loam about 7 inches thick. The subsoil extends to a depth of about 38 inches. It is yellowish brown channery and very channery silty clay loam. Below this is siltstone bedrock.

Permeability is moderate or moderately rapid. The available water capacity is moderate. Runoff is medium. This soil can be easily tilled. The organic matter content of the surface layer is moderate. The root zone is moderately deep. The depth to bedrock is 20 to 40 inches.

Included with this soil in mapping are small areas of Eden, Lowell, and Nicholson soils. Also included are a few areas of Culleoka soils that are severely eroded and have a surface layer of channery silty clay loam. Included soils make up about 5 to 10 percent of this map unit.

Most of the acreage of this Culleoka soil is used for cultivated crops, hay, or pasture. A few areas are used as woodland.

This soil is suited to cultivated crops and small grains. The hazard of erosion is severe if a conventional tillage system is used. Combinations of cropping systems and erosion-control practices are needed to slow runoff and control soil loss. Contour farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Soil quality can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to all of the hay and pasture plants that are commonly grown in the survey area. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is well suited to woodland, but only a few areas are used for timber production. The common trees are yellow-poplar, upland oaks, and black cherry. Some of the species preferred for planting are white oak, yellow-poplar, and eastern white pine. Plant competition is a management concern. Proper site preparation, weed control, or other management may be needed to control undesirable plants.

This soil is suited to some urban uses. The depth to bedrock, the slope, and seepage are limitations affecting most sanitary facilities. The depth to bedrock and the slope are limitations affecting building site developments. Low soil strength and the slope are limitations on sites for local roads and streets. Some limitations may be overcome by proper engineering designs and techniques.

This soil is in capability subclass 3e.

CuD2—Culleoka silt loam, 12 to 25 percent slopes, eroded

This moderately deep, well drained, moderately steep soil is on upper side slopes in the uplands, mainly in the Hills of the Bluegrass region of the survey area. Individual areas range from 5 to 75 acres in size.

Typically, the surface layer of this soil is brown silt loam about 7 inches thick. The subsoil extends to a depth of about 38 inches. It is yellowish brown channery and very channery silty clay loam. Below this is siltstone bedrock.

Permeability is moderate or moderately rapid. The available water capacity is moderate. Runoff is medium. This soil can be easily tilled. The organic matter content of the surface layer is moderate. The root zone is moderately deep. The depth to bedrock is 20 to 40 inches.

Included with this soil in mapping are small areas of Cynthiana, Eden, and Lowell soils. Also included are a few areas of severely eroded Culleoka soils that have a surface layer of channery silty clay loam. Included soils make up about 10 to 15 percent of this map unit.

Most areas of this Culleoka soil are used for hay or pasture. A few areas are used for cultivated crops or woodland.

This soil is poorly suited to most cultivated crops because of the slope. The hazard of erosion is very severe if a conventional tillage system is used. Combinations of cropping systems and erosion-control practices are needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Tilth and organic matter can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is suited to all of the hay and pasture plants that are commonly grown in the survey area.

Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is well suited to woodland, but only a few areas are used for timber production. The common trees are yellow-poplar, upland oaks, and black cherry. Some species preferred for planting on cool aspects include white oak, yellow-poplar, and eastern white pine. Those on warm aspects include white oak, shortleaf pine, and eastern white pine. The hazard of erosion, equipment limitation, and plant competition are management concerns on cool aspects. Seedling mortality is an additional concern on warm aspects. Steep skid trails and roads are subject to washing and gullying unless protected by water bars, plant cover, or both. The slope may limit the use of some types of equipment. Reforestation may require careful management to ensure the survival of seedlings and to reduce competition from undesirable understory plants.

This soil is poorly suited to most urban uses. The depth to bedrock, the slope, and seepage are limitations affecting most sanitary facilities. The depth to bedrock and the slope are limitations affecting building site developments. Low soil strength and the slope are limitations on sites for local roads and streets. Some limitations may be overcome by proper engineering designs and techniques.

This soil is in capability subclass 4e.

CyF2—Cynthiana-Faywood complex, 25 to 50 percent slopes, eroded, very rocky

This map unit consists of moderately deep and shallow, well drained, steep soils on side slopes in the uplands, mainly in the Inner and Outer Bluegrass regions of the survey area. The Cynthiana soil is on the steeper, convex upper side slopes. The Faywood soil is on the less sloping, lower side slopes. Erosion has removed about 25 to 75 percent of the original surface layer. The Cynthiana and Faywood soils are so closely intermingled that they could not be separated at the scale selected for mapping. Limestone ledges and scattered areas of exposed bedrock cover about 2 to 10 percent of the surface. Individual areas range from about 5 to 260 acres in size. Cynthiana and similar soils make up about 50 percent of this complex, and Faywood and similar soils make up about 35 percent.

Typically, the surface layer of this Cynthiana soil is brown silty clay loam about 6 inches thick. The subsoil extends to a depth of about 16 inches and is dark yellowish brown clay. Below this is limestone bedrock.

Permeability of the Cynthiana soil is moderately slow. The available water capacity is low. Runoff is very high. The root zone is shallow. The organic matter content of the surface layer is low or moderate. The shrink-swell potential is moderate. The depth to limestone bedrock is 10 to 20 inches.

Typically, the surface layer of this Faywood soil is brown silty clay loam about 6 inches thick. The subsoil extends to a depth of about 30 inches and is dark yellowish brown silty clay in the upper part and yellowish brown and light olive brown clay in the lower part. Below this is limestone bedrock interbedded with thin layers of calcareous shale.

Permeability of the Faywood soil is moderately slow or slow. The available water capacity is moderate. Runoff is very high. The organic matter content of the surface layer is low or moderate. The root zone is moderately deep. The shrink-swell potential is moderate. The depth to limestone bedrock is 20 to 40 inches.

Included with these soils in mapping are small areas of Fairmount, Lowell, and Eden soils. Included soils make up about 10 to 15 percent of this map unit.

Most areas of the Cynthiana and Faywood soils are used for pasture. A few areas are used for hay or woodland.

These soils are not suited to cultivated crops. The slope and rock outcrops are the main limitations affecting the use of farm equipment.

These soils are poorly suited to pasture and hay. The slope and rock outcrops limit the use of equipment. Grasses and legumes that provide adequate forage and ground cover and require minimum renovation are needed. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth.

These soils are suited to woodland. The common trees are hackberry, white ash, northern red oak, eastern redcedar, and sugar maple. Some species preferred for planting in areas of the Cynthiana soil are white oak, eastern redcedar, and white ash. Some species preferred for planting in areas of the Faywood soil are eastern white pine, white oak, and northern red oak. The hazard of erosion, equipment limitation, and seedling mortality are management concerns in areas of the Cynthiana soil. The hazard of erosion, equipment limitation, and plant competition are management concerns in areas of the Faywood soil. Steep skid trails and roads are subject to washing and gullying unless protected by water bars or vegetation. The slope and rock outcrops limit the use of wheeled

and tracked equipment. Reforestation may require careful management to ensure the survival of seedlings and to reduce competition from undesirable understory plants.

The Cynthiana and Faywood soils are poorly suited to urban uses because of the depth to bedrock, the slope, a high content of clay, low soil strength, and the shrink-swell potential. Some limitations can be overcome by proper engineering designs and techniques.

These soils are in capability subclass 7s.

DAM—Dam, large

This map unit represents the material used for the embankment of large water bodies. It consists of extremely variable material that has been compacted and graded. The material may have been excavated from adjacent soil areas or removed from other locations and deposited in place in the construction of the dam. Most areas support a cover of grass and legumes.

No capability class is assigned to this map unit.

DoB—Donerail silt loam, 2 to 6 percent slopes

This very deep, moderately well drained, gently sloping soil is in upland depressions and along drainageways, mainly in the Inner Bluegrass region of the survey area. Individual areas range from about 3 to 20 acres in size.

Typically, the surface layer of this soil is very dark grayish brown silt loam about 8 inches thick. The subsurface layer is dark brown silt loam to a depth of about 14 inches. The subsoil extends to a depth of about 45 inches. It is dark yellowish brown silty clay loam in the upper part and brown mottled silty clay in the lower part. The substratum is yellowish brown mottled clay to a depth of about 65 inches.

Permeability is slow. The available water capacity is high. Runoff is medium. This soil can be easily tilled. The organic matter content of the surface layer is moderate or high. The root zone is very deep. The shrink-swell potential is moderate. A seasonal high water table is at a depth of 1.5 to 3.0 feet. The depth to bedrock is more than 60 inches.

Included with this soil in mapping are a few areas of Elk, Newark, and Sandview soils. Included soils make up about 5 to 10 percent of this map unit.

Most of the acreage of this Donerail soil is used for cultivated crops, hay, or pasture.

This soil is well suited to most cultivated crops and small grains. Tobacco does not grow well on this soil during wet years. The erosion hazard is moderate if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Soil quality can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to most of the hay and pasture plants commonly grown in the survey area. Some deep-rooted plants may be affected by the wetness. Proper stocking, restricting use when the soil is wet, and rotational grazing help to maintain grassland and soil tilth. Pasture renovation should be frequent enough to maintain the desired plants.

This soil is well suited to woodland, but only a few areas are used for timber production. The common trees are upland oaks, American elm, and hackberry. Some of the species preferred for planting are yellow-poplar, white ash, and black walnut. Plant competition is a management concern. Proper site preparation, weed control, or other management may be needed to control undesirable plants.

This soil is poorly suited to most urban uses. The wetness, slow permeability, and a high content of clay are limitations affecting most sanitary facilities. The wetness and low soil strength are limitations affecting building site developments. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 2e.

EdD2—Eden flaggy silty clay loam, 8 to 25 percent slopes, eroded

This moderately deep, well drained, strongly sloping and moderately steep soil is on side slopes and narrow ridgetops in the uplands, mainly in the Hills of the Bluegrass region of the survey area. Erosion has removed about 25 to 75 percent of the original surface layer. Individual areas range from about 5 to 500 acres in size.

Typically, the surface layer of this soil is brown flaggy silty clay loam about 5 inches thick. The subsoil extends to a depth of about 24 inches and is light olive brown flaggy silty clay. Below this is interbedded shale and limestone bedrock.

Permeability is slow. The available water capacity is

moderate. Runoff is high. Tillage is difficult because of the flagstones on the surface. The organic matter content of the surface layer is low. The root zone is moderately deep. The shrink-swell potential is moderate. The depth to bedrock is 20 to 40 inches.

Included with this soil in mapping are small areas of Culleoka, Cynthiana, Faywood, and Lowell soils. Also included are areas of Eden soils that are severely eroded and have a surface layer of flaggy silty clay. Included soils make up about 10 to 15 percent of this map unit.

Most of the acreage of this Eden soil is used for pasture. A few areas are used for cultivated crops, hay, or woodland. Some areas are idle and are reverting to brush and woodland.

This soil is poorly suited to cultivated crops. The hazard of erosion is very severe if a conventional tillage system is used. The slope and flagstones limit the use of farm equipment. Combinations of cropping systems and erosion-control practices are needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Soil quality can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is suited to all of the hay and pasture plants commonly grown in the survey area. The slope and the flagstones on the surface limit the use of equipment. Grasses and legumes that provide adequate forage and ground cover and require minimum renovation are needed. Proper stocking, restricting use when the soil is wet, and rotational grazing help to maintain grassland and soil tilth. Pasture renovation should be frequent enough to maintain the desired plants.

This soil is suited to woodland. The common trees are upland oaks, eastern redcedar, and black locust. Some of the species preferred for planting are white oak, eastern white pine, and white ash. The hazard of erosion, the equipment limitation, seedling mortality, and plant competition are management concerns. Steep skid trails and roads are subject to washing and gullying unless protected by water bars, plant cover, or both. The slope and flagstones may limit the use of some equipment. Reforestation may require careful management to ensure the survival of seedlings and to reduce competition from undesirable understory plants.

This soil is poorly suited to most urban uses because of the depth to bedrock, slope, large stones, low soil strength, and shrink-swell potential. Some limitations may be overcome by proper engineering designs and techniques.

This soil is in capability subclass 4e.

EfF2—Eden-Culleoka association, 25 to 50 percent slopes, eroded, stony

These moderately deep, well drained, steep soils are on side slopes and narrow ridgetops in the uplands, mainly in Hills of the Bluegrass region of the survey area. The Eden soil is on the lower side slopes, and the Culleoka soil is on the upper side slopes and narrow convex ridgetops. Erosion has removed about 25 to 75 percent of the original surface layer. Surface stones occur in scattered areas. Individual areas of this map unit range from about 5 to 500 acres in size. Eden and similar soils make up about 45 percent of this association, and Culleoka and similar soils make up about 40 percent.

Typically, the surface layer of this Eden soil is brown flaggy silty clay loam about 5 inches thick. The subsoil extends to a depth of about 24 inches and is light olive brown flaggy silty clay. Below this is interbedded shale and limestone bedrock.

Permeability of the Eden soil is slow. The available water capacity is moderate. Runoff is high. The organic matter content of the surface layer is low. The root zone is moderately deep. The shrink-swell potential is moderate. The depth to bedrock is 20 to 40 inches.

Typically, the surface layer of this Culleoka soil is brown flaggy silt loam about 4 inches thick. The subsoil extends to a depth of about 21 inches. It is dark brownish yellow flaggy silty clay loam in the upper part and flaggy yellowish brown loam in the lower part. Below this is siltstone bedrock.

Permeability of the Culleoka soil is moderate or moderately rapid. The available water capacity is moderate. Runoff is high. The organic matter content of the surface layer is moderate. The root zone is moderately deep. The depth to bedrock is 20 to 40 inches.

Included with these soils in mapping are intermingled small areas of Cynthiana, Faywood, and Lowell soils. Included soils make up about 15 to 20 percent of this map unit.

Most areas of the Eden and Culleoka soils are used for pasture and woodland. Some areas are idle land that is reverting to brush and woodland. These soils are unsuited to cultivated crops and hay and are poorly suited to pasture because of the slope and stoniness.

These soils are suited to woodland. The common

trees are white oak, black oak, and eastern redcedar. Some species preferred for planting on the Eden soil are white oak, eastern white pine, and white ash. Some species preferred for planting on the cool aspects of the Culleoka soil are white oak, eastern white pine, and yellow-poplar, and those on the warm aspects include white oak, eastern white pine, and shortleaf pine. The hazard of erosion, equipment limitation, seedling mortality, and plant competition are management concerns. Steep skid trails and roads are subject to washing and gullying unless protected by water bars, plant cover, or both. The slope and surface stones can limit the use of some equipment. Reforestation may require careful management to ensure the survival of seedlings and to reduce competition from undesirable understory plants.

These soils are poorly suited to most urban uses because of the slope, the depth to bedrock, the stoniness, and low soil strength. Some limitations may be overcome by proper engineering designs and techniques.

These soils are in capability subclass 7e.

EkB—Elk silt loam, 2 to 6 percent slopes

This very deep, well drained, gently sloping soil is on stream terraces throughout the survey area. Individual areas range from about 3 to 25 acres in size.

Typically, the surface layer of this soil is dark yellowish brown silt loam about 8 inches thick. The subsoil extends to a depth of about 65 inches. It is dark yellowish brown silt loam in the upper part and strong brown and yellowish brown silty clay loam in the lower part.

Permeability is moderate. The available water capacity is high. Runoff is low. This soil can be easily tilled. The organic matter content of the surface layer is moderate. The root zone is very deep. The depth to bedrock is more than 60 inches.

Included with this soil in mapping are small areas of Allegheny, Donerail, Nolin, and Otwell soils. Also included are a few areas of a soil with a darker surface layer and a higher content of clay in the subsoil than the Elk soil. Included soils make up about 5 to 15 percent of this map unit.

Most of the acreage of this Elk soil is used for cultivated crops or hay. A few areas are used as pasture.

This soil is well suited to all of the commonly grown row crops and small grains. The hazard of erosion is moderate if a conventional tillage system is used. Combinations of cropping systems and erosion-control practices are needed to slow runoff and control soil loss. Contour farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Soil quality can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to all of the hay and pasture plants that are commonly grown in the survey area. Restricting use when the soil is wet, proper stocking, and rotational grazing help to maintain grassland and soil tilth. Pasture renovation should be frequent enough to maintain the desired plants.

This soil is well suited to woodland, but only a few areas are used for timber production. The common trees are yellow-poplar, red maple, and black walnut. Some of the species preferred for planting are eastern white pine, white ash, black walnut, and white oak. Plant competition is a management concern. Proper site preparation, weed control, or other management may be needed to control undesirable plants.

This soil is well suited to most urban uses. Low soil strength is a limitation on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 2e.

EkC—Elk silt loam, 6 to 12 percent slopes

This very deep, well drained, sloping soil is on slightly convex stream terraces throughout the survey area. Individual areas range from about 3 to 20 acres in size.

Typically, the surface layer of this soil is dark yellowish brown silt loam about 8 inches thick. The subsoil extends to a depth of about 65 inches. It is dark yellowish brown silt loam in the upper part and strong brown and yellowish brown silty clay loam in the lower part.

Permeability is moderate. The available water capacity is high. Runoff is medium. This soil can be easily tilled. The organic matter content of the surface layer is moderate. The root zone is very deep. The depth to bedrock is more than 60 inches.

Included with this soil in mapping are small areas of Allegheny, Nolin, and Otwell soils. Also included are a few small areas of a soil with a darker surface layer and a higher content of clay in the subsoil than the Elk soil. Included soils make up about 5 to 15 percent of this map unit.

Most of the acreage of this Elk soil is used for

cultivated crops, hay, or pasture. A few areas are used as woodland.

This soil is suited to all of the commonly grown row crops and small grains. The hazard of erosion is severe if a conventional tillage system is used. Combinations of cropping systems and erosion-control practices are needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Soil quality can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to all of the hay and pasture plants commonly grown in the survey area. Restricting use when the soil is wet, proper stocking, and rotational grazing help to maintain grassland and soil tilth. Pasture renovation should be frequent enough to maintain the desired plants.

This soil is well suited to woodland, but only a few areas are used for timber production. The common trees are yellow-poplar, red maple, and black walnut. Some of the species preferred for planting are eastern white pine, white ash, black walnut, and white oak. Plant competition is a management concern. Proper site preparation, weed control, or other management may be needed to control undesirable plants.

This soil is suited to most urban uses. The slope is a limitation affecting sanitary facilities and building site developments. Low soil strength is a limitation on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 3e.

EmB—Elk silt loam, 2 to 6 percent slopes, rarely flooded

This very deep, well drained, gently sloping soil is on stream terraces throughout the survey area. Individual areas range from about 3 to 25 acres in size.

Typically, the surface layer of this soil is dark yellowish brown silt loam about 8 inches thick. The subsoil extends to a depth of about 65 inches. It is dark yellowish brown silt loam in the upper part and strong brown and yellowish brown silty clay loam in the lower part.

Permeability is moderate. The available water capacity is high. Runoff is low. This soil can be easily tilled. The organic matter content of the surface layer is moderate. The root zone is very deep. The depth to bedrock is more than 60 inches. This soil is subject to rare flooding for brief duration during late winter and spring.

Included with this soil in mapping are small areas of Allegheny, Donerail, Nolin, and Otwell soils. Also included are a few small areas of Elk soils that do not flood and areas of a soil that has a darker surface layer and a higher content of clay in the subsoil than the Elk soil. Included soils make up about 5 to 15 percent of this map unit.

This soil is well suited to cultivated crops. Flooding in winter and early spring may damage small grains and corn. The hazard of erosion is moderate if a conventional tillage system is used. Combinations of cropping systems and erosion-control practices are needed to slow runoff and control soil loss. Contour farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Soil quality can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to all of the hay and pasture plants that are commonly grown in the survey area. Restricting use when the soil is wet, proper stocking, and rotational grazing help to maintain grassland and soil tilth. Pasture renovation should be frequent enough to maintain the desired plants.

This soil is well suited to woodland, but only a few areas are used for timber production. The common trees are yellow-poplar, red maple, and black walnut. Some of the species preferred for planting are eastern white pine, white ash, black walnut, and white oak. Plant competition is a management concern. Proper site preparation, weed control, or other management may be needed to control undesirable plants.

This soil is poorly suited to most urban uses because of the hazard of flooding. Low soil strength is a limitation on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 2e.

FaC2—Fairmount silty clay loam, 6 to 12 percent slopes, eroded, very rocky

This shallow, well drained, sloping soil is on ridgetops and side slopes in the uplands, mainly in the Inner Bluegrass region of the survey area. Intermingled areas of rock outcrop cover about 4 percent of the surface. Erosion has removed about 25

to 75 percent of the original surface layer. Individual areas range from about 5 to 30 acres in size.

Typically, the surface layer is dark brown silty clay loam about 9 inches thick. The subsoil extends to a depth of about 18 inches and is dark yellowish brown flaggy silty clay. Below this is limestone bedrock.

Permeability is slow. The available water capacity is low. Runoff is high. The organic matter content of the surface layer is moderate or high. The root zone is shallow, and root penetration may be restricted because of the high clay content. The shrink-swell potential is moderate. The depth to limestone bedrock is 10 to 20 inches.

Included with this soil in mapping are small areas of Cynthiana, Faywood phosphatic, and Lowell phosphatic soils. Also included are small areas of Fairmount soils with slopes of more than 12 percent. Included soils make up about 5 to 15 percent of this map unit.

Most of the acreage of this Fairmount soil is used for pasture. A few areas are used for hay or woodland. Some areas are idle and are reverting to brush and eastern redcedar.

This soil generally is not suited to cultivated crops or hay because of the depth to bedrock, low available water capacity, and rock outcrops.

This soil is suited to all of the pasture plants that are commonly grown in the survey area. The equipment limitation caused by the rock outcrops is a management concern. Proper stocking rates, restricting use when the soil is wet, and rotational grazing help to maintain grassland and soil tilth. Pasture renovation should be frequent enough to maintain the desired plants.

This soil is suited to woodland, but only a few areas are used for timber production. The common trees are white oak, scarlet oak, and eastern redcedar. Some of the species preferred for planting are white oak, Virginia pine, and eastern redcedar. The equipment limitation, seedling mortality, and plant competition are management concerns. Rock outcrops may limit the use of some types of equipment. Reforestation may require careful management to ensure the survival of seedlings.

This soil is unsuited to most urban uses. The depth to bedrock, the slow permeability, and a high content of clay are limitations affecting sanitary facilities. The depth to bedrock is a limitation affecting building site developments. The depth to bedrock and low soil strength are limitations on sites for local roads and streets. Some limitations may be overcome by proper engineering designs and techniques.

This soil is in capability subclass 6s.

FdF2—Fairmount-Faywood-Rock outcrop complex, 25 to 50 percent slopes, eroded

This map unit consists of shallow and moderately deep, well drained, steep soils and Rock outcrop. It is on side slopes adjacent to streams and sinkholes in the uplands, mainly in the Inner Bluegrass region of the survey area. The Fairmount and Faywood soils and areas of Rock outcrop are so closely intermingled that they could not be separated at the scale used in mapping. The Fairmount soil is on the steeper convex upper side slopes, and the Faywood soil is on the less sloping middle and lower side slopes. Erosion has removed about 25 to 75 percent of the original surface layer. The Rock outcrop is concentrated along the steeper, more convex slopes. Individual areas of this map unit range from about 3 to 95 acres in size. Fairmount and similar soils make up about 45 percent of this complex, Faywood and similar soils make up about 30 percent, and Rock outcrop makes up about 20 percent.

Typically, the surface layer of this Fairmount soil is dark brown silty clay loam about 9 inches thick. The subsoil extends to a depth of about 18 inches and is dark yellowish brown flaggy silty clay. Below this is limestone bedrock.

Permeability of the Fairmount soil is slow. The available water capacity is low. Runoff is very rapid. The organic matter content of the surface layer is moderate or high. The root zone is shallow, and root penetration may be restricted because of the high clay content. The shrink-swell potential is moderate. The depth to limestone bedrock is 10 to 20 inches.

Typically, the surface layer of this Faywood soil is brown silty clay loam about 6 inches thick. The subsoil extends to a depth of about 30 inches. It is dark yellowish brown silty clay in the upper part and yellowish brown and light olive brown mottled clay in the lower part. Below this is limestone bedrock interbedded with thin layers of calcareous shale.

Permeability of the Faywood soil is slow. The available water capacity is moderate or low. Runoff is high. The organic matter content of the surface layer is low or moderate. The root zone is moderately deep. The shrink-swell potential is moderate. The depth to limestone bedrock is 20 to 40 inches.

The Rock outcrop consists of short limestone ledges and bluffs and small areas of exposed limestone scattered throughout the map unit.

Included with this unit in mapping are small areas of Lowell phosphatic and Cynthiana soils. Also included are areas of soils that are severely eroded and areas

of very shallow soils that support little or no vegetation. Included soils make up about 5 percent of this map unit.

Most areas of this map unit are used for pasture or woodland. Some areas are idle land and reverting to brush and eastern redcedar.

The Fairmount and Faywood soils are unsuited to cultivated crops or hay and are poorly suited to pasture. The slope, the depth to bedrock, low available water capacity, and the Rock outcrop are the main limitations.

These soils are suited to woodland. The common trees are black oak, northern red oak, white ash, and eastern redcedar. Some species preferred for planting on the Fairmount soil are white oak, Virginia pine, and northern red oak. Some species preferred for planting on the Faywood soil are eastern white pine, white oak, and white ash. The hazard of erosion, use of equipment, and seedling mortality are management concerns in areas of both soils. Plant competition is also a management concern in areas of the Faywood soil. Steep skid trails and roads are subject to rilling and gullying unless adequate water bars, plant cover, or both protect them. The slope and the Rock outcrop limit the use of some equipment. Cable skidding is generally safer and disturbs the soil less. Reforestation may require careful management to ensure the survival of seedlings and to reduce competition from undesirable understory plants. These soils are well suited to woodland wildlife habitat.

The Fairmount and Faywood soils are unsuited to most urban uses because of the slope, the depth to bedrock, slow permeability, a high content of clay, the shrink-swell potential, low soil strength, and Rock outcrop. Some limitations can be overcome by proper engineering designs and techniques.

The Fairmount and Faywood soils are in capability subclass 7s. The Rock outcrop is in capability subclass 8.

FeC2—Faywood-Cynthiana complex, 6 to 12 percent slopes, eroded, rocky

These shallow to moderately deep, well drained, sloping soils are on ridgetops and side slopes in the uplands, mainly in the Outer Bluegrass and Hills of the Bluegrass regions of the survey area. The Faywood soil is on the ridgetops and less sloping lower side slopes, and the Cynthiana soil is on the steeper convex upper side slopes. Limestone ledges and scattered small areas of exposed limestone make up about 0.5 to 2.0 percent of the map unit. Erosion has removed about 25 to 75 percent of the original surface layer. The Faywood and Cynthiana soils occur as areas so closely intermingled they could not be separated at the scale used for mapping. Individual areas range from about 5 to 315 acres in size. Faywood and similar soils make up about 60 percent of this map unit, and Cynthiana and similar soils make up about 30 percent.

Typically, the surface layer of this Faywood soil is brown silty clay loam about 6 inches thick. The subsoil extends to a depth of about 30 inches. It is dark yellowish brown silty clay in the upper part and yellowish brown and light olive brown mottled clay in the lower part. Below this is limestone bedrock interbedded with thin layers of calcareous shale.

Permeability of the Faywood soil is slow. The available water capacity is moderate. Runoff is high. This soil is somewhat difficult to till because the clayey subsoil has been mixed with the surface layer. The organic matter content of the surface layer is low or moderate. The root zone is moderately deep. The shrink-swell potential is moderate. The depth to limestone bedrock is 20 to 40 inches.

Typically, the surface layer of this Cynthiana soil is brown silty clay loam about 6 inches thick. The subsoil extends to a depth of about 16 inches and is dark yellowish brown clay. Below this is limestone bedrock.

Permeability of the Cynthiana soil is moderately slow. The available water capacity is low. Runoff is high. This soil is somewhat difficult to till because the clayey subsoil has been mixed with the surface layer. The organic matter content of the surface layer is low or moderate. The root zone is shallow. The shrink-swell potential is moderate. The depth to limestone bedrock is about 10 to 20 inches.

Included with this unit in mapping are small areas of Beasley, Eden, Fairmount, Lowell, and Sandview soils. Included soils make up about 10 to 15 percent of this map unit.

Most areas of the Faywood and Cynthiana soils are used for pasture or hay. A few areas are used for woodland.

These soils are unsuited to cultivated crops because of the limited root zone of the Cynthiana soil, low available water capacity, and rock outcrops.

These soils are suited to pasture and poorly suited to hay. The rock outcrops and the depth to bedrock are the main limitations. Grasses and legumes that provide adequate forage and ground cover are needed. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

These soils are suited to woodland, but only a few areas are used for timber production. The common trees are white ash, northern red oak, hackberry, and black walnut. Some species preferred for planting on the Faywood soil are white oak, white ash, and eastern white pine. Some species preferred for planting on the Cynthiana soil are eastern redcedar, white oak, and white ash. The equipment limitation and plant competition are management concerns in areas of the Faywood soil. The equipment limitation and seedling mortality are management concerns in areas of the Cynthiana soil. Rock outcrops and a high content of clay may limit the use of some types of equipment. Reforestation may require careful management to ensure the survival of seedlings and to reduce competition from undesirable understory plants.

These soils are poorly suited to most urban uses because of the depth to bedrock, a high content of clay, slow permeability, rock outcrops, and low soil strength. Some limitations can be overcome by proper engineering designs and techniques.

The Faywood soil is in capability subclass 4s, and the Cynthiana soil is in capability subclass 6s.

FeD2—Faywood-Cynthiana complex, 12 to 25 percent slopes, eroded, very rocky

These shallow and moderately deep, well drained, strongly sloping soils are on side slopes in the uplands, mainly in the Outer Bluegrass and Hills of the Bluegrass regions of the survey area. The Faywood soil is on the ridgetops and less sloping lower side slopes, and the Cynthiana soil is on the steeper convex upper side slopes. Limestone ledges and scattered small areas of exposed limestone bedrock make up about 2 to 10 percent of the map unit. Erosion has removed about 25 to 75 percent of the original surface layer. The Faywood and Cynthiana soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping. Individual areas range from about 5 to 315 acres in size. Faywood and similar soils make up about 50 percent of this complex, and Cynthiana and similar soils make up about 35 percent.

Typically, the surface layer of this Faywood soil is brown silty clay loam about 6 inches thick. The subsoil extends to a depth of about 30 inches. It is dark yellowish brown silty clay in the upper part and yellowish brown and light olive brown mottled clay in the lower part. Below this is limestone bedrock interbedded with thin layers of calcareous shale.

Permeability of the Faywood soil is slow. The available water capacity is moderate or low. Runoff is very high. The organic matter content of the surface layer is low or moderate. The root zone is moderately deep. The shrink-swell potential is moderate. The depth to limestone bedrock is 20 to 40 inches.

Typically, the surface layer of this Cynthiana soil is brown silty clay loam about 6 inches thick. The subsoil extends to a depth of about 16 inches and is dark yellowish brown clay. Below this is limestone bedrock.

Permeability of the Cynthiana soil is moderately slow. The available water capacity is low. Runoff is very high. The root zone is shallow. The organic matter content of the surface layer is low or moderate. The shrink-swell potential is moderate. The depth to limestone bedrock is about 10 to 20 inches.

Included with this unit in mapping are small areas of Beasley, Eden, Fairmount, Lowell, and Sandview soils. Included soils make up about 10 to 15 percent of this map unit.

Most areas of the Faywood and Cynthiana soils are used for pasture and hay (fig. 15). A few areas are used for woodland. Some areas are idle land and are reverting to brush.

These soils are unsuited to cultivated crops. The slope, the depth to bedrock, the low available water capacity, and rock outcrops are the main limitations.

These soils are suited to pasture and poorly suited to hay. The rock outcrops and the slope limit the use of equipment. Grasses and legumes that provide adequate forage and ground cover and require minimum renovation are needed. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

These soils are suited to woodland, but only a few areas are used for timber production. The common trees are white ash, northern red oak, hackberry, and black walnut. Some species preferred for planting in areas of the Faywood soil are white oak, white ash, and eastern white pine. Some species preferred for planting in areas of the Cynthiana soil are eastern redcedar, white oak, and white ash. The hazard of erosion, the equipment limitation, and plant competition are management concerns in areas of the Faywood soil. The hazard of erosion, the equipment limitation, and seedling mortality are management concerns in areas of the Cynthiana soil. Steep skid trails and roads are subject to gullying unless protected by water bars or plant cover, or both. The rock outcrops and the high content of clay limit the use of some equipment. Reforestation may require careful

Figure 15.—Hay in an area of Faywood-Cynthiana complex, 12 to 25 percent slopes, eroded, very rocky.

management to ensure the survival of seedlings and to reduce competition from undesirable understory plants.

These soils are poorly suited to most urban uses because of the depth to bedrock, the slope, the shrink-swell potential, low soil strength, and a high content of clay. Some limitations can be overcome by proper engineering designs and techniques.

These soils are in capability subclass 6s.

FfC2—Faywood-Fairmount complex, phosphatic, 6 to 12 percent slopes, eroded, rocky

These shallow and moderately deep, well drained, sloping soils are on ridgetops and side slopes in the uplands, mainly in the Inner Bluegrass region of the survey area. Limestone ledges and scattered small areas of exposed limestone bedrock make up about 0.5 to 2.0 percent of the map unit. Erosion has removed about 25 to 75 percent of the original surface layer. Individual areas range from about 5 to 150 acres in size. Faywood and similar soils make up about 50 percent of this complex, and Fairmount and similar soils make up about 35 percent.

Typically, the surface layer of this Faywood soil is brown silty clay loam about 6 inches thick. The subsoil extends to a depth of about 30 inches. It is dark yellowish brown silty clay in the upper part and yellowish brown and light olive brown mottled clay in the lower part. Below this is limestone bedrock interbedded with thin layers of calcareous shale.

Permeability of the Faywood soil is slow. The available water capacity is moderate. Runoff is high. This soil is somewhat difficult to till because the clayey subsoil has been mixed into the surface layer. The organic matter content of the surface layer is low or moderate. The root zone is moderately deep. In many areas this soil is high in phosphates. The shrink-swell potential is moderate. The depth to limestone bedrock is 20 to 40 inches.

Typically, the surface layer of this Fairmount soil is dark brown silty clay loam about 9 inches thick. The subsoil extends to a depth of about 18 inches and is dark yellowish brown flaggy silty clay. Below this is limestone bedrock.

Permeability of the Fairmount soil is slow. The

available water capacity is low. Runoff is high. The organic matter content of the surface layer is moderate or high. The root zone is shallow. The shrink-swell potential is moderate. The depth to limestone bedrock is 10 to 20 inches.

Included with this unit in mapping are small areas of Lowell phosphatic, Cynthiana, and Eden soils. Included soils make up about 15 percent of this map unit.

Most areas of the Fairwood and Fairmount soils are used for hay and pasture. A few areas are used for woodland. Many of the horse farms in Garrard County have Faywood phosphatic and Fairmount soils on side slopes and ridgetops.

These soils are not suited to cultivated crops and are poorly suited to hay. They are suited to pasture. The depth to bedrock, low available water capacity, and rock outcrops are the main limitations.

These soils are suited to all of the pasture plants that are commonly grown in the survey area. The phosphate content of these soils makes the grass ideally suited to race horses. The rock outcrops can limit the use of equipment. Grasses and legumes that provide adequate forage and ground cover and require minimum renovation are needed. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

These soils are suited to woodland, but only a few areas are used for timber production. The common trees are northern red oak, black oak, white ash, and sugar maple. Some species preferred for planting in areas of the Faywood soil are white oak, eastern white pine, and northern red oak. Some species preferred for planting in areas of the Fairmount soil are white oak, Virginia pine, and northern red oak. The equipment limitation and plant competition are management concerns in areas of the Faywood soil. The equipment limitation and seedling mortality are management concerns in areas of the Fairmount soil. The rock outcrops and the slope may limit the use of some equipment. Reforestation may require careful management to ensure the survival of seedlings and to reduce competition from undesirable understory plants.

These soils are poorly suited to most urban uses because of the depth to bedrock, slow permeability, shrink-swell potential, and low soil strength. Some limitations can be overcome by proper engineering designs and techniques.

The Faywood soil is in capability subclass 4s, and the Fairmount soil is in capability subclass 6s.

FfD2—Faywood-Fairmount complex, phosphatic, 12 to 25 percent slopes, eroded, very rocky

These shallow and moderately deep, well drained, moderately steep soils are on side slopes, mainly in the Inner Bluegrass region of the survey area. The Faywood soil is on the less sloping lower side slopes, and the Fairmount soil is on the steeper, convex upper side slopes. The Faywood and Fairmount soils occur as areas so intermingled that they could not be separated at the scale selected for mapping. Limestone ledges and areas of exposed limestone make up about 2 to 10 percent of the surface. Erosion has removed about 25 to 75 percent of the original surface layer. Individual areas range from about 5 to 50 acres in size. Faywood and similar soils make up about 50 percent of this complex, and Fairmount and similar soils make up about 40 percent.

Typically, the surface layer of this Faywood soil is brown silty clay loam about 6 inches thick. The subsoil extends to a depth of about 30 inches. It is dark yellowish brown silty clay in the upper part and yellowish brown and light olive brown mottled clay in the lower part. Below this is limestone bedrock interbedded with thin layers of calcareous shale.

Permeability of the Faywood soil is slow. The available water capacity is moderate. Runoff is high. This soil is somewhat difficult to till because the clayey subsoil has been mixed with the surface layer. The organic matter content of the surface layer is low or moderate. The root zone is moderately deep. In many areas this soil is high in phosphates. The shrink-swell potential is moderate. The depth to limestone bedrock is 20 to 40 inches.

Typically, the surface layer of this Fairmount soil is dark brown silty clay loam about 9 inches thick. The subsoil extends to a depth of about 18 inches and is dark yellowish brown flaggy silty clay. Below this is limestone bedrock.

Permeability of the Fairmount soil is slow. The available water capacity is low. Runoff is high. The organic matter content of the surface layer is moderate or high. The root zone is shallow, and root penetration may be restricted because of the high clay content. The shrink-swell potential is moderate. The depth to limestone bedrock is 10 to 20 inches.

Included with this unit in mapping are small areas of Cynthiana, Lowell phosphatic, and Eden soils. Included soils make up about 10 to 20 percent of this map unit.

Most areas of the Faywood and Fairmount soils are used for pasture. A few areas are used for hay and

woodland. Many of the horse farms in Garrard County have Faywood phosphatic and Fairmount soils on side slopes and ridgetops.

These soils are unsuited to cultivated crops. The depth to bedrock, low available water capacity, and rock outcrops are the main limitations.

These soils are suited to all of the pasture plants that are commonly grown in the survey area. The phosphate content of the soil makes the grass ideally suited to race horses. The rock outcrops limit the use of equipment in establishing and maintaining plants. Grasses and legumes that provide adequate forage and ground cover and require minimum renovation are needed. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

These soils are suited to woodland, but only a few areas are used for timber production. The common trees are northern red oak, black oak, white ash, and sugar maple. Some species preferred for planting in areas of the Faywood soil are white oak, eastern white pine, and northern red oak. Some species preferred for planting in areas of the Fairmount soil are white oak, Virginia pine, and northern red oak. The hazard of erosion, the equipment limitation, and plant competition are management concerns in areas of the Faywood soil. The hazard of erosion, the equipment limitation, and seedling mortality are management concerns in areas of the Fairmount soil. Steep skid trails and roads are subject to gullying unless protected by water bars or plant cover, or both. The slope and rock outcrops limit the use of some equipment. Reforestation may require careful management to ensure the survival of seedlings and to reduce competition from undesirable understory plants.

These soils are poorly suited to most urban uses because of the depth to bedrock, slow permeability, shrink-swell potential, slope, and low soil strength. Some limitations can be overcome by proper engineering designs and techniques.

These soils are in capability subclass is 6s.

FoD2—Faywood-Shrouts complex, 12 to 25 percent slopes, eroded, rocky

These moderately deep, well drained, moderately steep soils are on side slopes in the uplands, mainly in the Outer Bluegrass region of the survey area. The Faywood and Shrouts soils are in areas so closely intermingled that they could not be separated at the scale selected for mapping. Limestone ledges and scattered small areas of exposed limestone bedrock cover about 0.1 to 2.0 percent of the surface. Erosion has removed about 25 to 75 percent of the original surface layer. Individual areas range from about 5 to 300 acres in size. Faywood and similar soils make up about 45 percent of this complex, and Shrouts and similar soils make up about 35 percent.

Typically, the surface layer of this Faywood soil is brown silty clay loam about 6 inches thick. The subsoil extends to a depth of about 30 inches. It is dark yellowish brown silty clay in the upper part and yellowish brown and light olive brown mottled clay in the lower part. Below this is limestone bedrock interbedded with thin layers of calcareous shale.

Permeability of the Faywood soil is slow. The available water capacity is moderate. Runoff is high. This soil is somewhat difficult to till because the clayey subsoil has been mixed with the surface layer. The organic matter content of the surface layer is low or moderate. The root zone is moderately deep. The shrink-swell potential is moderate. The depth to limestone bedrock is 20 to 40 inches.

Typically, the surface layer of this Shrouts soil is dark yellowish brown silty clay loam about 4 inches thick. The subsoil extends to a depth of 26 inches. It is yellowish brown mottled silty clay in the upper part and olive brown mottled clay in the lower part. Below this is soft mudstone and shale bedrock.

Permeability of the Shrouts soil is slow. The available water capacity is moderate or low. Runoff is high. This soil is somewhat difficult to till because the clayey subsoil has been mixed into the surface layer. The organic matter content of the surface layer is low. The root zone is moderately deep. The shrink-swell potential is moderate. The depth to soft bedrock is 20 to 40 inches.

Included with these soils in mapping are small areas of Cynthiana, Beasley, Garlin, and Lowell soils. Included soils make up about 10 to 15 percent of this map unit.

Most areas of the Faywood and Shrouts soils are used for hay and pasture. A few areas are used as woodland.

These soils are unsuited to cultivated crops because of the slope, low available water capacity, and rock outcrops.

These soils are suited to pasture. The slope and the rock outcrops limit the use of equipment in establishing and maintaining plants. Grasses and legumes that provide adequate forage and ground cover and require minimum renovation are needed. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth.

These soils are suited to woodland, but only a few areas are used for timber production. The common trees are white oak, scarlet oak, eastern redcedar, and sugar maple. Some species preferred for planting in areas of the Faywood soil are white oak, eastern white pine, and northern red oak. Some species preferred for planting in areas of the Shrouts soil are white oak, Virginia pine, and eastern redcedar. The hazard of erosion, the equipment limitation, and plant competition are management concerns in areas of both soils. Seedling mortality is also a management concern in areas of the Shrouts soil. Steep skid trails and roads are subject to gullying unless protected by water bars or plant cover, or both. The slope, the rock outcrops, and a high content of clay can limit the use of some types of equipment. Reforestation may require careful management to ensure the survival of seedlings and to reduce competition from undesirable understory plants.

These soils are poorly suited to most urban uses because of the depth to bedrock, slow permeability, the slope, a high content of clay, and low soil strength. Some limitations can be overcome by proper engineering designs and techniques.

These soils are in capability subclass 6s.

FoF2—Faywood-Shrouts complex, 25 to 60 percent slopes, eroded, rocky

These moderately deep, well drained, steep soils are on side slopes and hillsides in the uplands, mainly in the Outer Bluegrass region of the survey area. Limestone ledges and scattered small areas of exposed bedrock make up about 0.1 to 2.0 percent of the map unit. Erosion has removed about 25 to 75 percent of the original surface layer. The Faywood and Shrouts soils are in areas so closely intermingled that they could not be separated at the scale selected for mapping. Individual areas range from about 5 to 300 acres in size. Faywood and similar soils make up about 45 percent of this complex, and Shrouts and similar soils make up about 35 percent.

Typically, the surface layer of this Faywood soil is brown silty clay loam about 6 inches thick. The subsoil extends to a depth of about 30 inches. It is dark yellowish brown silty clay in the upper part and yellowish brown and light olive brown mottled clay in the lower part. Below this is limestone bedrock interbedded with thin layers of calcareous shale.

Permeability of the Faywood soil is slow. The available water capacity is moderate. Runoff is very high. The organic matter content of the surface layer is low or moderate. The root zone is moderately deep. The shrink-swell potential is moderate. The depth to limestone bedrock is 20 to 40 inches.

Typically, the surface layer of this Shrouts soil is dark yellowish brown silty clay loam about 4 inches thick. The subsoil extends to a depth of 26 inches. It is yellowish brown mottled silty clay in the upper part and olive brown mottled clay in the lower part. Below this is soft shale bedrock.

Permeability of the Shrouts soil is slow. The available water capacity is moderate or low. Runoff is very high. The organic matter content of the surface layer is low. The root zone is moderately deep. The shrink-swell potential is moderate. The depth to soft shale bedrock is 20 to 40 inches.

Included with these soils in mapping are small areas of Cynthiana, Beasley, Garlin, and Lowell soils. Included soils make up about 20 percent of this map unit.

Most areas of the Faywood and Shrouts soils are used for pasture or woodland. These soils are unsuited to cultivated crops or hay and are poorly suited to pasture. The slope, low available capacity, and rock outcrops are the main limitations.

These soils are suited to woodland. The common trees are white oak, scarlet oak, eastern redcedar, and sugar maple. Some species preferred for planting in areas of the Faywood soil are white oak, eastern white pine, and northern red oak. Some species preferred for planting in areas of the Shrouts soil are white oak, Virginia pine, and eastern redcedar. The hazard of erosion, the equipment limitation, and plant competition are management concerns in areas of both soils. Seedling mortality is also a management concern in areas of the Shrouts soil. Steep skid trails and roads are subject to gullying unless protected by water bars or plant cover, or both. The slope, rock outcrops, and a high content of clay can limit the use of some types of equipment. Reforestation may require careful management to ensure the survival of seedlings and to reduce competition from undesirable understory plants.

These soils are unsuited to urban uses because of the slope, the depth to bedrock, the slow permeability, a high content of clay, and low soil strength. Some limitations can be overcome by proper engineering designs and techniques.

These soils are in capability subclass 7s.

FrB—Frankstown gravelly silt loam, 2 to 6 percent slopes

This deep and very deep, well drained, gently sloping soil is on ridgetops in the uplands, mainly in

the Pennyroyal region of the survey area. Individual areas range from about 5 to 185 acres in size.

Typically, the surface layer of this soil is brown gravelly silt loam about 8 inches thick. The subsoil extends to a depth of about 44 inches. It is yellowish brown and strong brown gravelly silt loam in the upper part and strong brown and red gravelly silty clay loam in the lower part. Below this is siltstone bedrock.

Permeability is moderate. The available water capacity is high. Runoff is low. This soil can be easily tilled. The organic matter content of the surface layer is low or moderate. The root zone is deep or very deep. The shrink-swell potential is moderate. The depth to bedrock is 40 to more than 60 inches.

Included with this soil in mapping are small areas of Christian, Pricetown, and Teddy soils. Also included are small areas of Frankstown soils that are moderately eroded and have a surface layer of gravelly silty clay loam. Included soils make up about 10 to 20 percent of this map unit.

Most areas of the Frankstown soil are used for cultivated crops, hay, or pasture.

This soil is well suited to all of the commonly grown row crops and small grains. The hazard of erosion is moderate if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Soil quality can be maintained or improved by returning crop residue to the soil, using no-till planting, growing green manure crops and cover crops, and including grasses and legumes in the cropping sequence.

This soil is well suited to all of the hay and pasture plants that are commonly grown in the survey area. Restricting use when the soil is wet, proper stocking, and rotational grazing help to maintain grassland and soil tilth. Pasture renovation should be frequent enough to maintain the desired plants.

This soil is well suited to woodland, but only a few areas are used for timber production. The common trees are yellow-poplar, northern red oak, and white oak. Some of the species preferred for planting are yellow-poplar, white oak, black walnut, and eastern white pine. Plant competition is a management concern.

This soil is suited to most urban uses. The depth to bedrock is a limitation affecting most sanitary facilities and building site developments. Low soil strength is a limitation on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 2e.

FrC—Frankstown gravelly silt loam, 6 to 12 percent slopes

This deep and very deep, well drained, sloping soil is on narrow ridgetops and side slopes in the uplands, mainly in the Pennyroyal region of the survey area. Individual areas range from about 5 to 285 acres in size.

Typically, the surface layer of this soil is brown gravelly silt loam about 8 inches thick. The subsoil extends to a depth of about 44 inches. It is yellowish brown and strong brown gravelly silt loam in the upper part and strong brown and red gravelly silty clay loam in the lower part. Below this is siltstone bedrock.

Permeability is moderate. The available water capacity is high. Runoff is medium. This soil is somewhat difficult to till because of the content of gravel in the surface layer. The organic matter content of the surface layer is low or moderate. The root zone is deep or very deep. The shrink-swell potential is moderate. The depth to bedrock is 40 to more than 60 inches.

Included with this soil in mapping are small areas of Christian, Pricetown, Teddy, and Garmon soils. Also included are small areas of Frankstown soils that are moderately eroded and have a surface layer of gravelly silty clay loam. Included soils make up about 10 to 15 percent of this map unit.

Most areas of this Frankstown soil are used for cultivated crops, hay, or pasture. A few areas are used for woodland.

This soil is suited to all of the commonly grown row crops and small grains. The hazard of erosion is severe if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Soil quality can be maintained or improved by returning crop residue to the soil, using no-till planting, growing green manure crops and cover crops, and including grasses and legumes in the cropping sequence.

This soil is well suited to all of the hay and pasture plants that are commonly grown in the survey area. Restricting use when the soil is wet, proper stocking, and rotational grazing help to maintain grassland and soil tilth. Pasture renovation should be frequent enough to maintain the desired plants.

This soil is well suited to woodland, but only a few areas are used for timber production. The common trees are yellow-poplar, northern red oak, and white oak. Some of the species preferred for planting are

yellow-poplar, white oak, black walnut, and eastern white pine. Plant competition is a management concern.

This soil is suited to most urban uses. The depth to bedrock and the slope are limitations affecting most sanitary facilities. The depth to bedrock, the slope, and the shrink-swell potential are limitations affecting most building site developments. Low soil strength is a limitation on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 3e.

FrD2—Frankstown gravelly silt loam, 12 to 25 percent slopes, eroded

This deep and very deep, well drained, moderately steep soil is on narrow ridgetops and side slopes in the uplands, mainly in the Pennyroyal region of the survey area. Individual areas range from about 5 to 210 acres in size.

Typically, the surface layer of this soil is yellowish brown gravelly silt loam about 5 inches thick. The subsoil extends to a depth of about 45 inches. It is yellowish brown and strong brown gravelly silt loam in the upper part and strong brown and red gravelly silty clay loam in the lower part. Below this is siltstone bedrock.

Permeability is moderate. The available water capacity is high. Runoff is medium. This soil can easily be tilled. The organic matter content of the surface layer is low or moderate. The root zone is deep or very deep. The shrink-swell potential is moderate. The depth to bedrock is 40 to more than 60 inches.

Included with this soil in mapping are small areas of Christian, Pricetown, and Garmon soils. Also included are small areas of Frankstown soils that are severely eroded and have a surface layer of gravelly silty clay loam. Included soils make up about 15 percent of this map unit.

Most areas of this Frankstown soil are used for hay and pasture. A few areas are used for cultivated crops or woodland.

This soil is poorly suited to most cultivated crops because of the slope. The hazard of erosion is very severe if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to control erosion, conserve soil moisture, and improve water quality. Soil quality can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is suited to all of the hay and pasture plants that are commonly grown in the survey area. Restricting use when the soil is wet, proper stocking, and rotational grazing help to maintain grassland and soil tilth. Pasture renovation should be frequent enough to maintain the desired plants.

This soil is well suited to woodland, but only a few areas are used for timber production. The common trees are yellow-poplar, northern red oak, and white oak. Some of the species preferred for planting are yellow-poplar, white oak, black walnut, and eastern white pine. The hazard of erosion, equipment limitation, and plant competition are management concerns. Steep skid trails and roads are subject to gullying unless protected by water bars or plant cover, or both. The slope limits the use of some types of equipment. Proper site preparation, weed control, or other management may be needed to control undesirable plants.

This soil is poorly suited to most urban uses because of the slope, the depth to bedrock, low soil strength, and the shrink-swell potential. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 4e.

GaC2—Garlin-Shrouts complex, 6 to 12 percent slopes, eroded

These shallow and moderately deep, well drained, sloping soils are on ridgetops and upper side slopes in the uplands, mainly in the eastern part of the Outer Bluegrass and Knobs regions of the survey area. Erosion has removed 25 to 75 percent of the original surface layer. The Garlin and Shrouts soils are in areas so closely intermingled that they could not be separated at the scale used in mapping. Individual areas range from about 5 to 220 acres in size. Garlin and similar soils make up about 45 percent of this complex, and Shrouts and similar soils make up about 35 percent.

Typically, the surface layer of this Garlin soil is very dark grayish brown loam about 6 inches thick. The subsoil extends to a depth of about 18 inches and is light yellowish brown loam. Below this is about 5 inches of soft weathered calcareous siltstone. Below that is hard calcareous siltstone.

Permeability of the Garlin soil is moderate. The available water capacity is low or moderate. Runoff is high. The organic matter content of the surface layer is low or moderate. The root zone is shallow. Soft bedrock is at a depth of 12 to 20 inches.

Typically, the surface layer of this Shrouts soil is dark yellowish brown silty clay loam about 4 inches thick. The subsoil extends to a depth of about 26 inches and is yellowish brown and olive brown mottled silty clay and clay. The substratum is olive brown clay to a depth of about 35 inches. Below this is soft calcareous shale bedrock interbedded with thin layers of marl.

Permeability of the Shrouts soil is slow. The available water capacity is low. Runoff is high. This soil is somewhat difficult to till because the clayey subsoil has been mixed into the surface layer. The organic matter content of the surface layer is low. The root zone is moderately deep. The shrink-swell potential is moderate. The depth to soft bedrock is 20 to 40 inches.

Included with these soils in mapping are small areas of Beasley, Faywood, and Cynthiana soils. Also included are small areas of a soil similar to the Garlin soil that is more than 20 inches to bedrock. Included soils make up about 15 to 20 percent of this map unit.

Most areas of the Garlin and Shrouts soils are used for pasture. A few areas are used for woodland. Many areas are idle and are reverting to brush and woodland.

These soils are unsuited to cultivated crops and poorly suited to hay. The depth to bedrock, low available water capacity, and erosion of the original surface layer are the main limitations.

These soils are suited to most of the pasture plants that are commonly grown in the survey area. Grasses and legumes that provide adequate forage and ground cover and require minimum renovation are needed. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth.

These soils are suited to woodland. The common trees are eastern redcedar, hackberry, scarlet oak, and eastern redbud. Some species preferred for planting are Virginia pine and eastern redcedar. The hazard of erosion, seedling mortality, and plant competition are management concerns in areas of both soils. The equipment limitation is also a management concern in areas of the Shrouts soil. Skid trails and roads are subject to rilling and gullying unless adequate water bars, plant cover, or both protect them. The high content of clay in the Shrouts soil can limit the use of some equipment. Reforestation may require careful management to ensure the survival of seedlings and to reduce competition from undesirable understory plants.

These soils are poorly suited to urban uses because of the depth to bedrock, a high content of clay, low soil strength, and the shrink-swell potential. Some limitations may be overcome by proper engineering designs and techniques.

The Garlin soil is in capability subclass 6e, and the Shrouts soil is in capability subclass 4e.

GaD2—Garlin-Shrouts complex, 12 to 25 percent slopes, eroded, rocky

These shallow and moderately deep, well drained, moderately steep soils are on convex side slopes in the uplands, mainly in the eastern part of the Outer Bluegrass and Knobs regions of the survey area. Limestone ledges and small areas of exposed bedrock and marl are scattered throughout the map unit and make up about 0.1 to 2.0 percent of the unit. Erosion has removed 25 to 75 percent of the original surface layer. In some areas rills and small gullies are common. The Garlin and Shrouts soils are in areas so closely intermingled that they could not be separated at the scale used in mapping. Individual areas range from about 5 to 220 acres in size. Garlin and similar soils make up about 50 percent of this complex, and Shrouts and similar soils make up about 30 percent.

Typically, the surface layer of this Garlin soil is very dark grayish brown loam about 6 inches thick. The subsoil extends to a depth of about 18 inches and is light yellowish brown loam. Below this is about 5 inches of soft weathered calcareous siltstone. Below that is hard calcareous siltstone.

Permeability of the Garlin soil is moderate. The available water capacity is low. Runoff is high. The organic matter content of the surface layer is low or moderate. The root zone is shallow. Soft bedrock is at a depth of 12 to 20 inches.

Typically, the surface layer of this Shrouts soil is dark yellowish brown silty clay loam about 4 inches thick. The subsoil extends to a depth of about 26 inches and is yellowish brown and light olive brown mottled silty clay and clay. The substratum is olive gray clay to a depth of about 35 inches. Below this is soft calcareous shale bedrock interbedded with thin layers of marl.

Permeability of the Shrouts soil is slow. The available water capacity is moderate or low. Runoff is high. This soil is somewhat difficult to till because the clayey subsoil has been mixed into the surface layer. The organic matter content of the surface layer is low. The root zone is moderately deep. The shrink-swell potential is moderate. The depth to soft bedrock is 20 to 40 inches.

Included with these soils in mapping are small areas of Beasley, Faywood, and Cynthiana soils. Also

included are small areas of a soil similar to the Garlin soil that is more than 20 inches deep to bedrock. Included soils make up about 15 to 20 percent of this map unit.

Most areas of the Garlin and Shrouts soils are used for pasture. A few areas are used for woodland. Many areas are idle and are reverting to brush and woodland.

These soils are unsuited to cultivated crops and poorly suited to hay. The depth to bedrock, slope, low available water capacity, and erosion of the original surface layer are the main limitations.

These soils are suited to most of the pasture plants commonly grown in the survey area. Grasses and legumes that provide adequate forage and ground cover and require minimum renovation are needed. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth.

These soils are suited to woodland. The common trees are eastern redcedar, hackberry, scarlet oak, and eastern redbud. Some species preferred for planting are Virginia pine and eastern redcedar. The hazard of erosion, equipment limitation, seedling mortality, and plant competition are management concerns. Skid trails and roads are subject to rilling and gullying unless adequate water bars, plant cover, or both protect them. The slope and rock outcrops can limit the use of some equipment. Reforestation may require careful management to ensure the survival of seedlings and to reduce competition from undesirable understory plants.

These soils are unsuited to urban uses because of the depth to bedrock, slope, a high content of clay, low soil strength, and the shrink-swell potential. Some limitations may be overcome by proper engineering designs and techniques.

The Garlin soil is in capability subclass 7e, and the Shrouts soil is in capability subclass 6e.

GmF—Garmon channery silt loam, 25 to 80 percent slopes, rocky

This moderately deep, well drained, very steep soil is on convex side slopes in the uplands, mainly in the Pennyroyal and Knobs regions of the survey area. Siltstone outcrops cover about 0.5 to 2.0 percent of the surface. Individual areas range from about 50 to more than 1,500 acres in size.

Typically, the surface layer of this soil is brown channery silt loam about 3 inches thick. The subsoil extends to a depth of about 26 inches. It is yellowish brown and light yellowish brown channery silt loam. Hard siltstone bedrock is at a depth of 26 inches.

Permeability is moderately rapid. The available water capacity is low. Runoff is very high. The organic matter content of the surface layer is low or moderate. The root zone is moderately deep. Siltstone bedrock is at a depth of 20 to 40 inches.

Included with this soil in mapping are small areas of Frankstown, Carpenter, and Lenberg soils. Also included are small areas of a soil that is similar to the Garmon soil but less than 20 inches deep to bedrock and areas of soils around drainageways that contain more rock fragments in the solum. Included soils make up about 10 to 15 percent of this map unit.

Most areas of this Garmon soil are used for woodland. This soil generally is unsuited to cultivated crops, hay, or pasture. The slope, low available water capacity, and rock outcrops are the main limitations.

This soil is suited to woodland. The common trees are yellow-poplar, white oak, northern red oak, and sugar maple. Some species preferred for planting on cool aspects are yellow-poplar, white oak, and white ash. Those on warm aspects are Virginia pine, white oak, and eastern redcedar. The hazard of erosion, equipment limitation, seedling mortality, and plant competition are management concerns. Steep skid trails and roads are subject to gullying unless protected by water bars or plant cover, or both. The slope and rock outcrops can limit the use of equipment. Reforestation may require careful management to ensure the survival of seedlings and to reduce competition from undesirable understory plants.

This soil is unsuited to most urban uses because of the slope, rock outcrops, and the depth to bedrock. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 7e.

GnB—Gilpin silt loam, 2 to 6 percent slopes

This moderately deep, well drained, gently sloping soil is on ridgetops in the uplands, mainly in the eastern part of the Knobs region of the survey area. Individual areas range from about 5 to 75 acres in size.

Typically, the surface layer of this soil is dark yellowish brown silt loam about 5 inches thick. The subsoil extends to a depth of about 32 inches and is yellowish brown channery silty clay loam. Below this is siltstone bedrock.

Permeability is moderate. The available water capacity is moderate. Runoff is low. This soil can easily be tilled. The organic matter content of the surface

layer is moderate. The root zone is moderately deep. The depth to siltstone bedrock is about 20 to 40 inches.

Included with this Gilpin soil in mapping are small areas of Christian, Frankstown, and Garmon soils. Also included are small areas of Gilpin soils that have a surface layer of gravelly or channery silt loam. Included soils make up about 5 to 10 percent of this map unit.

Most areas of the Gilpin soil are used for cultivated crops, hay, or pasture. A few areas are used as woodland.

This soil is well suited to all of the commonly grown row crops and small grains. The hazard of erosion is moderate if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, stripcropping, and conservation tillage help to control erosion, conserve soil moisture, and improve water quality. Soil quality can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to all of the hay and pasture plants that are commonly grown in the survey area. Restricting use when the soil is wet, proper stocking, and rotational grazing help to maintain grassland and soil tilth. Pasture renovation should be frequent enough to maintain the desired plants.

This soil is well suited to woodland, but only a few areas are used for timber production. The common trees are black oak, yellow-poplar, northern red oak, and white oak. Some of the species preferred for planting are yellow-poplar, white oak, and northern red oak. Plant competition is a management concern. Proper site preparation, weed control, or other management may be needed to control undesirable plants.

This soil is suited to most urban uses. The depth to bedrock is a limitation affecting most sanitary facilities and building site developments. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 2e.

GnC2—Gilpin silt loam, 6 to 12 percent slopes, eroded

This moderately deep, well drained, sloping soil is on ridgetops in the uplands, mainly in the eastern part of the Knobs region of the survey area. Individual areas range from about 5 to 75 acres in size.

Typically, the surface layer of this soil is yellowish brown silt loam about 4 inches thick. The subsoil extends to a depth of about 32 inches and is yellowish brown channery silty clay loam. Below this is siltstone bedrock.

Permeability is moderate. The available water capacity is moderate. Runoff is medium. This soil can be easily tilled. The organic matter content of the surface layer is moderate. The root zone is moderately deep. The depth to siltstone bedrock is about 20 to 40 inches.

Included with this Gilpin soil in mapping are small areas of Christian, Frankstown, and Garmon soils. Also included are small areas of Gilpin soils that have a gravelly or channery surface layer. Included soils make up about 10 to 15 percent of this map unit.

Most areas of the Gilpin soil are used for cultivated crops, hay, or pasture. A few areas are used as woodland.

This soil is suited to all of the commonly grown row crops and small grains. The hazard of erosion is severe if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to control erosion, conserve soil moisture, and improve water quality. Soil quality can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to all of the hay and pasture plants that are commonly grown in the survey area. Restricting use when the soil is wet, proper stocking, and rotational grazing help to maintain grassland and soil tilth. Pasture renovation should be frequent enough to maintain the desired plants.

This soil is well suited to woodland, but only a few areas are used for timber production. The common trees are black oak, yellow-poplar, northern red oak, and white oak. Some of the species preferred for planting are yellow-poplar, white oak, and northern red oak. Plant competition is a management concern. Proper site preparation, weed control, or other management may be needed to control undesirable plants.

This soil is suited to some urban uses. The depth to bedrock and the slope are limitations affecting most sanitary facilities and building site developments. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 3e.

GrB—Greenbriar silt loam, 2 to 6 percent slopes

This deep and very deep, well drained, gently sloping soil is on wide ridgetops in the uplands, mainly in the Knobs region of the survey area. Individual areas range from about 5 to 215 acres in size.

Typically, the surface layer of this soil is brown silt loam about 10 inches thick. The subsoil extends to a depth of about 48 inches. It is yellowish brown silty clay loam in the upper part and yellowish brown and brownish yellow mottled silty clay loam in the lower part. Hard shale bedrock is at a depth of 48 inches.

Permeability is moderate. The available water capacity is high. Runoff is low. This soil can be easily tilled. The organic matter content of the surface layer is moderate. The root zone is deep or very deep. The depth to hard shale bedrock is 40 to 72 inches.

Included with this soil in mapping are small areas of Crider, Jessietown, Tilsit, and Trappist soils. Also included are a few areas of moderately eroded Greenbriar soils. Included soils make up about 5 to 10 percent of this map unit.

Most areas of this Greenbriar soil are used for cultivated crops, hay, or pasture. A few areas are used as woodland.

This soil is well suited to all of the commonly grown row crops and small grains. Erosion is a moderate hazard if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Tilth and organic matter can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to all of the commonly grown hay and pasture plants, especially alfalfa. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is well suited to woodland, but only a few areas are used for timber production. The common trees are shortleaf pine, white oak, red maple, and hickory. Some of the species preferred for planting are yellow-poplar, black walnut, and white oak. Plant competition is a management concern. Proper site preparation, weed control, or other management may be needed to control undesirable plants.

This soil is well suited to most urban uses. The depth to bedrock is a limitation affecting sanitary facilities and building site developments. Low soil strength is a limitation on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 2e.

HgC—Hagerstown silt loam, 6 to 12 percent slopes

This deep and very deep, well drained, sloping soil is on narrow ridgetops and shoulder slopes in the uplands, mainly in the Outer Bluegrass region of the survey area. Individual areas range from about 5 to 80 acres in size.

Typically, the surface layer of this soil, to a depth of about 7 inches, is dark yellowish brown silt loam. The subsoil extends to a depth of about 65 inches. It is strong brown silty clay loam in the upper part, red silty clay in the middle part, and red clay in the lower part.

Permeability is moderately slow or slow. The available water capacity is high. Runoff is medium. This soil can be easily tilled. The organic matter content of the surface layer is low or moderate. The root zone is deep or very deep. The shrink-swell potential is moderate. The depth to limestone bedrock is 40 to 84 inches or more.

Included with this soil in mapping are small areas of Crider, Lowell, and Sandview soils. Also included are a few areas of Hagerstown soils that have slopes of less than 6 percent and a few areas of Hagerstown soils that are eroded. Included soils make up about 5 to 10 percent of this map unit.

Most areas of this Hagerstown soil are used for cultivated crops, hay, or pasture. A few areas are used as woodland.

This soil is suited to all of the commonly grown row crops and small grains. The hazard of erosion is severe if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Tilth and organic matter can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to all of the commonly grown hay and pasture plants. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth.

Frequent pasture renovation helps to maintain the desired plants.

This soil is well suited to woodland, but only a few areas are used for timber production. The common trees are northern red oak, yellow-poplar, and hickory. Some of the species preferred for planting are yellow-poplar, white oak, and eastern white pine. The equipment limitation is a management concern. The high content of clay can limit the use of some equipment.

This soil is suited to most urban uses. The depth to bedrock, the slope, and the moderately slow permeability are limitations affecting most sanitary facilities. The depth to bedrock, the slope, and the moderate shrink-swell potential are limitations affecting most building site developments. Low soil strength is a limitation on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 3e.

JeB—Jessietown silt loam, 2 to 6 percent slopes

This moderately deep, well drained, gently sloping soil is on ridgetops in the uplands, mainly in the Knobs region of the survey area. Individual areas range from about 5 to 45 acres in size.

Typically, the surface layer of this soil is brown silt loam to a depth of 8 inches. The subsoil extends to a depth of about 22 inches. It is dark yellowish brown silty clay loam in the upper part and yellowish brown channery silty clay loam in the lower part. Below this is hard black shale bedrock.

Permeability is moderate. The available water capacity is moderate. Runoff is low. This soil can be easily tilled. The organic matter content of the surface layer is moderate. The root zone is moderately deep. The depth to bedrock is 20 to 40 inches.

Included with this soil in mapping are small areas of Berea, Greenbriar, and Trappist soils. Also included are a few small areas of soils that are similar to the Jessietown soil but are less than 20 inches deep to bedrock. Included soils make up about 10 to 15 percent of the map unit.

Most areas of this Jessietown soil are used for cultivated crops, hay, or pasture. A few areas are used as woodland.

This soil is well suited to all of the commonly grown row crops and small grains. Erosion is a moderate hazard if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Tilth and organic matter can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to all of the hay and pasture plants that are commonly grown in the survey area. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is suited to woodland, but only a few areas are used for timber production. The common trees are white oak, black oak, hickory, and red maple. Some of the species preferred for planting are Virginia pine, white oak, and shortleaf pine. Plant competition is a management concern. Proper site preparation, weed control, or other management may be needed to control undesirable plants.

This soil is suited to some urban uses. The depth to bedrock is a limitation affecting sanitary facilities and building site developments. Low soil strength is a limitation on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 2e.

JeC—Jessietown silt loam, 6 to 12 percent slopes

This moderately deep, well drained, sloping soil is on ridgetops in the uplands, mainly in the Knobs region of the survey area. Individual areas range from about 5 to 35 acres in size.

Typically, the surface layer of this soil is brown silt loam to a depth of 8 inches. The subsoil extends to a depth of about 22 inches. It is dark yellowish brown silty clay loam in the upper part and yellowish brown channery silty clay loam in the lower part. Below this is hard black shale bedrock.

Permeability is moderate. The available water capacity is moderate. Runoff is medium. This soil can be easily tilled. The organic matter content of the surface layer is moderate. The root zone is moderately deep. The depth to bedrock is 20 to 40 inches.

Included with this soil in mapping are small areas of Berea, Greenbriar, and Trappist soils. Also included are a few small areas of soils that are similar to the Jessietown soil but are less than 20 inches deep to bedrock. Included soils make up about 10 to 15 percent of the map unit.

Most areas of this Jessietown soil are used for cultivated crops, hay, or pasture. A few areas are used as woodland.

This soil is well suited to all of the commonly grown row crops and small grains. Erosion is a severe hazard if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Tilth and organic matter can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to all of the hay and pasture plants that are commonly grown in the survey area. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is suited to woodland, but only a few areas are used for timber production. The common trees are white oak, black oak, hickory, and red maple. Some of the species preferred for planting are Virginia pine, white oak, and shortleaf pine. Plant competition is a management concern. Proper site preparation, weed control, or other management may be needed to control undesirable plants.

This soil is suited to some urban uses. The depth to bedrock and the slope are limitations affecting most sanitary facilities and building site developments. Low soil strength is a limitation on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 3e.

Jm—Johnsburg-Mullins complex

These deep and very deep, somewhat poorly drained and poorly drained, nearly level soils are in low-lying areas in the uplands, mainly in the Knobs region of the survey area. The Johnsburg and Mullins soils are in areas so closely intermingled that they could not be separated at the scale used in mapping. The Johnsburg soil is in the slightly higher positions, and the Mullins soil is in the slightly lower positions. Slopes range from 0 to 2 percent. Individual areas range from about 5 to 50 acres in size. Johnsburg and similar soils make up about 45 percent of this complex, and Mullins and similar soils make up about 35 percent.

Typically, the surface layer of this Johnsburg soil is brown silt loam to a depth of about 6 inches. The subsoil extends to a depth of about 48 inches. The upper part of the subsoil is yellowish brown silt loam. The middle part is pale brown silty clay loam with gray mottles. The lower part is a firm, compact fragipan of pale brown and light brownish gray silty clay loam. Below this is shale bedrock.

Permeability of the Johnsburg soil is moderate above the fragipan and very slow in the fragipan. The available water capacity is moderate. Runoff is very low. This soil can be easily tilled. The organic matter content of the surface layer is low or moderate. The root zone is moderately deep to the fragipan. The shrink-swell potential is moderate. The seasonal high water table is at a depth of 1.0 to 1.5 feet. The depth to bedrock is more than 40 inches.

Typically, the surface layer of this Mullins soil is light brownish gray silt loam to a depth of about 6 inches. The subsoil extends to a depth of about 50 inches. The upper part of the subsoil is light gray silt loam with brown mottles. The middle part is a firm, compact fragipan of light gray silt loam with brown mottles. The lower part is light gray silty clay loam with brown mottles. The substratum, to a depth of 55 inches, is light gray very channery silty clay loam with brown mottles. Below this is hard shale bedrock.

Permeability of the Mullins soil is slow above the fragipan and very slow in the fragipan. The available water capacity is moderate. Runoff is medium. This soil can be easily tilled. The organic matter content of the surface layer is low or moderate. The root zone is moderately deep because of the fragipan. The seasonal high water table is within a depth of 1 foot. The depth to bedrock is more than 60 inches.

Included with these soils in mapping are small areas of Berea, Jessietown, and Tilsit soils. Also included are a few small areas of a soil that is less than 40 inches deep to bedrock and soils that are moderately acid or slightly acid in the upper part of the solum. Included soils make up about 10 to 20 percent of the map unit.

Most areas of the Johnsburg and Mullins soils are used for hay and pasture. Some areas are used for cultivated crops or woodland.

These soils are poorly suited to small grains and corn because of a seasonal high water table during the winter and spring. Tillage is often delayed because of the excessive wetness. The effectiveness of tile drainage systems may be reduced because of the very slow permeability in the fragipan. Surface drainage systems may be more effective in reducing wetness. In some places diversions can help to control runoff and overwash from the adjacent soils. These drainage systems should only be used in areas

previously cultivated. They can help to lengthen the effective growing season, reduce the time that tillage is delayed, and increase the range of suitable plants. Tilth and organic matter can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

These soils are suited to hay and pasture plants that can withstand wetness. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

These soils are suited to woodland, but only a few areas are used for timber production. The common trees are yellow-poplar, sweetgum, white oak, and red maple. Some species preferred for planting in areas of the Johnsburg soil are yellow-poplar, American sycamore, and white ash. Some species preferred for planting in areas of the Mullins soil are pin oak, sweetgum, and white oak. Seedling mortality and plant competition are management concerns in areas of both soils. The equipment limitation is also a management concern in areas of the Mullins soil. Wetness during winter and spring can limit the use of some types of equipment. Reforestation may need careful management to ensure the survival of tree seedlings and to control undesirable plants.

These soils are poorly suited to most urban uses because of the wetness, very slow permeability, and low soil strength. Some limitations may be overcome by proper engineering designs and techniques.

The Johnsburg soil is in capability subclass 3w, and the Mullins soil is in capability subclass 4w.

Jr—Johnsburg-Robertsville complex

These deep and very deep, somewhat poorly drained and poorly drained, nearly level soils are in low areas in the uplands, mainly in the eastern part of the Pennyroyal region of the survey area. The Johnsburg and Robertsville soils are in areas so closely intermingled that they could not be separated at the scale selected for mapping. The Johnsburg soil is in the slightly higher positions, and the Robertsville soil is in the slightly lower positions. Slopes range from 0 to 2 percent. Individual areas range from about 5 to 65 acres in size. Johnsburg and similar soils make up about 50 percent of this complex, and Robertsville and similar soils make up about 30 percent.

Typically, the surface layer of this Johnsburg soil is brown silt loam to a depth of about 6 inches. The subsoil extends to a depth of about 48 inches. The upper part of the subsoil is yellowish brown silt loam. The middle part is pale brown silty clay loam with gray mottles. The lower part is a firm, compact fragipan of pale brown and light brownish gray silty clay loam with brown mottles. Below this is siltstone bedrock.

Permeability of the Johnsburg soil is moderate above the fragipan and very slow in the fragipan. The available water capacity is moderate. Runoff is very low. This soil can be easily tilled. The organic matter content of the surface layer is low or moderate. The root zone is moderately deep because of the fragipan. The shrink-swell potential is moderate. The seasonal high water table is at a depth of 1.0 to 1.5 feet. The depth to bedrock is more than 40 inches.

Typically, the surface layer of this Robertsville soil, to a depth of about 6 inches, is light brownish gray silt loam. The subsoil extends to a depth of about 60 inches. The upper part of the subsoil is gray silt loam with brown mottles. The middle part is a firm, compact fragipan of light gray silt loam with brown mottles. The lower part is light gray silty clay loam with brown mottles.

Permeability of the Robertsville soil is moderate above the fragipan and very slow in the fragipan. The available water capacity is moderate. Runoff is medium. This soil can be easily tilled. The organic matter content of the surface layer is low or moderate. The root zone is moderately deep because of the fragipan. The seasonal water table is within a depth of 1 foot. The depth to bedrock is more than 60 inches.

Included with these soils in mapping are small areas of Melvin, Newark, and Teddy soils. Also included are a few areas of soils that are similar to the Johnsburg and Robertsville soils but are less than 40 inches deep to bedrock. Included soils make up about 15 to 20 percent of the map unit.

Most areas of the Johnsburg and Robertsville soils are used for pasture and hay. Some areas are used for cultivated crops, and a few areas are used for woodland.

These soils are poorly suited to small grains and corn because of a seasonal high water table during the winter and spring. Tillage is often delayed because of the excessive wetness. The effectiveness of tile drainage systems may be reduced because of the very slow permeability in the fragipan. Surface drainage systems may be more effective in reducing wetness. In some places diversions can help to control runoff and overwash from the adjacent soils. These drainage systems should only be used in areas previously cultivated. They can help to lengthen the effective growing season, reduce the time that tillage is delayed, and increase the range of suitable plants.

Tilth and organic matter can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

These soils are suited to hay and pasture plants that can withstand wetness. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

These soils are suited to woodland, but only a few areas are used for timber production. The common trees are white oak, pin oak, sweetgum, and yellow-poplar. Some species preferred for planting in areas of the Johnsburg soil are yellow-poplar, American sycamore, and white ash. Some species preferred for planting in areas of the Robertsville soil are pin oak, sweetgum, and white oak. Seedling mortality and plant competition are management concerns in areas of both soils. The equipment limitation is also a management concern in areas of the Robertsville soil. Wetness during winter and spring can limit the use of some types of equipment. Reforestation may need careful management to ensure the survival of tree seedlings and to control undesirable plants.

These soils are poorly suited to most urban uses because of the wetness, very slow permeability, and low soil strength. Some limitations may be overcome by proper engineering designs and techniques.

The Johnsburg soil is in capability subclass 3w, and the Robertsville soil is in capability subclass 4w.

La—Lawrence silt loam, terrace, rarely flooded

This very deep, somewhat poorly drained, nearly level soil is on stream terraces throughout the survey area. Slopes range from 0 to 2 percent. Individual areas range from about 5 to 45 acres in size.

Typically, the surface layer of this soil is dark grayish brown silt loam about 7 inches thick. The subsoil extends to a depth of about 45 inches. The upper part of the subsoil is yellowish brown silt loam with gray mottles. The lower part is a firm, compact fragipan of brown silt loam and silty clay loam with gray mottles. The substratum, to a depth of 62 inches, is yellowish brown silty clay loam with gray mottles.

Permeability is moderate above the fragipan and very slow in the fragipan. The available water capacity is moderate. Runoff is very low. This soil can be easily tilled. The organic matter content of the surface layer is moderate. The root zone is moderately deep to the fragipan. The seasonal high water table is at a depth of 1.0 to 1.5 feet. The depth to bedrock is 60 inches or more. This soil is subject to rare flooding in late winter and spring.

Included with this soil in mapping are small areas of Melvin, Otwell, Newark, and Robertsville soils. Included soils make up about 15 percent of this map unit.

Most areas of the Lawrence soil are used for cultivated crops, pasture, or hay. A few areas are used as woodland.

This soil is suited to cultivated crops that can withstand wetness. It is poorly suited to small grains because of the seasonal high water table during the winter and spring. The effectiveness of tile drainage systems may be reduced because of the slow permeability in the fragipan. Surface drainage systems may be more effective in reducing wetness. In some places diversions help to control runoff and overwash from the adjacent soils. These drainage systems help to lengthen the effective growing season, reduce the time that tillage is delayed, and increase the range of suitable plants. Tilth and organic matter can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is suited to hay and pasture plants that can withstand wetness. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is suited to woodland, but only a few areas are used for timber production. The common trees are yellow-poplar, sweetgum, white oak, and red maple. Some of the species preferred for planting are yellow-poplar, white ash, and willow oak. The equipment limitation, seedling mortality, and plant competition are management concerns. Seasonal wetness may limit the use of some types of equipment. Reforestation may require careful management to ensure the survival of tree seedlings and to control undesirable plants.

This soil is poorly suited to most urban uses because of the flooding, wetness, very slow permeability, and low soil strength. Some limitations may be overcome by proper engineering designs and techniques.

This soil is in capability subclass 3w.

Le—Lawrence-Robertsville complex

These very deep, somewhat poorly drained and poorly drained, nearly level soils are in low areas in

the uplands, mainly in the Outer Bluegrass and Pennyroyal regions of the survey area. Slopes range from 0 to 2 percent. The Lawrence and Robertsville soils are in areas so closely intermingled that they could not be separated at the scale used in mapping. Individual areas range from about 5 to 45 acres in size. Lawrence soil makes up about 40 percent of this complex, and Robertsville soil makes up about 30 percent.

Typically, the surface layer of this Lawrence soil is dark grayish brown silt loam about 7 inches thick. The subsoil extends to a depth of about 45 inches. The upper part of the subsoil is yellowish brown silt loam with gray mottles. The lower part is a firm, compact fragipan of brown silt loam and silty clay loam with gray mottles. The substratum, to a depth of 62 inches, is yellowish brown silty clay loam with gray mottles.

Permeability of the Lawrence soil is moderate above the fragipan and very slow in the fragipan. The available water capacity is moderate. Runoff is very low. This soil can be easily tilled. The organic matter content of the surface layer is moderate. The root zone is moderately deep because of the fragipan. The seasonal high water table is at a depth of 1.0 to 1.5 feet. The depth to bedrock is 60 inches or more.

Typically, the surface layer of this Robertsville soil, to a depth of about 6 inches, is light brownish gray silt loam. The subsoil extends to a depth of about 60 inches. The upper part of the subsoil is gray silt loam with brown mottles. The middle part is a firm, compact fragipan of light gray silt loam with brown mottles. The lower part is light gray silty clay loam with brown mottles.

Permeability of the Robertsville soil is moderate above the fragipan and very slow in the fragipan. The available water capacity is moderate. Runoff is medium. This soil is easily tilled. The organic matter content of the surface layer is low or moderate. The root zone is moderately deep because of the fragipan. The seasonal water table is within a depth of 1 foot. The depth to bedrock is more than 60 inches.

Included with these soils in mapping are small areas of Newark, Nicholson, Melvin, Otwell, and Teddy soils. Also included are a few areas of Lawrence soils that have slopes of 2 to 4 percent and some areas in upland depressions that are subject to brief ponding. Included soils and other areas make up about 15 to 30 percent of this map unit.

Most areas of the Lawrence and Robertsville soils are used for pasture (fig. 16). Some areas are used for hay or cultivated crops, and a few areas are used for woodland.

These soils are poorly suited to small grains and corn because of a seasonal high water table during the winter and spring. Tillage is often delayed because of the excessive wetness. The effectiveness of tile drainage systems may be reduced because of the very slow permeability in the fragipan. Surface drainage systems may be more effective in reducing wetness. In some places diversions can help to control runoff and overwash from the adjacent soils. These drainage systems should only be used in areas previously cultivated. They can help to lengthen the effective growing season, reduce the time that tillage is delayed, and increase the range of suitable plants. Tilth and organic matter can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

These soils are suited to hay and pasture plants that can withstand wetness. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

These soils are suited to woodland, but only a few areas are used for timber production. The common trees are yellow-poplar, white oak, sweetgum, and red maple. Some species preferred for planting in areas of the Lawrence soil are yellow-poplar, white ash, white oak, and sweetgum. Some species preferred for planting in areas of the Robertsville soil are green ash, sweetgum, pin oak, and willow oak. The equipment limitation, seedling mortality, and plant competition are management concerns. Wetness in the winter and spring can limit the use of some equipment. Reforestation may need careful management to ensure the survival of tree seedlings and to control undesirable plants.

These soils are poorly suited to most urban uses because of the wetness, very slow permeability, and low soil strength. Some limitations can be overcome by proper engineering designs and techniques.

The Lawrence soil is in capability subclass 3w, and the Robertsville soil is in capability subclass 4w.

LgC2—Lenberg silty clay loam, 6 to 12 percent slopes, eroded

This moderately deep, well drained, sloping soil is on side slopes and narrow ridgetops in the uplands, mainly in the Knobs region of the survey area. Individual areas range from about 5 to 15 acres in size.

Typically, the surface layer of this soil is brown silty clay loam about 5 inches thick. The subsoil extends to

Figure 16.—Pasture and woodland in an area of Lawrence-Robertsville complex.

a depth of about 39 inches. It is yellowish brown and strong brown silty clay in the upper part and olive gray silty clay and channery silty clay in the lower part. Below this is soft shale bedrock.

Permeability is moderately slow. The available water capacity is moderate. Runoff is rapid. This soil is somewhat difficult to till because the clayey subsoil has been mixed with the surface layer. The organic matter content of the surface layer is low or moderate. The root zone is moderately deep. The shrink-swell potential is moderate. The depth to soft shale bedrock is 20 to 40 inches.

Included with this Lenberg soil in mapping are small areas of Carpenter and Trappist soils and a few small areas of Lenberg soils that are severely eroded and have a silty clay surface layer. Included soils make up about 10 to 15 percent of this map unit.

Most of the acreage of this Lenberg soil is used for pasture and hay. A few areas are used for woodland or cultivated crops.

This soil is suited to cultivated crops. The hazard of erosion, however, is severe if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Tilth and organic matter can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is suited to all of the hay and pasture plants that are commonly grown in the survey area. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is well suited to woodland, but only a few areas are used for timber production. The common trees are Virginia pine, white oak, and hickory. Some of the species preferred for planting are shortleaf pine, white oak, and Virginia pine. Plant competition is a management concern. Reforestation may require

careful management to reduce competition from undesirable plants.

This soil is suited to some urban uses. It is poorly suited to most sanitary facilities because of the depth to bedrock and moderately slow permeability. The depth to bedrock, the shrink-swell potential, and the slope are limitations affecting building site developments. Low soil strength is a limitation on sites for local roads and streets. Some limitations may be overcome by proper engineering designs and techniques.

This soil is in capability subclass 3e.

LlB—Lily loam, 2 to 6 percent slopes

This moderately deep, well drained soil is on gently sloping ridgetops in the uplands, mainly in the Pennyroyal region of the survey area. Individual areas range from about 5 to 30 acres in size.

Typically, the surface layer of this soil is brown loam about 6 inches thick. The subsoil extends to a depth of about 36 inches. It is strong brown loam in the upper part and strong brown clay loam in the lower part. Below this is about 3 inches of soft brown sandstone. Below that is hard sandstone.

Permeability is moderately rapid. The available water capacity is moderate. Runoff is low. This soil can be easily tilled. The organic matter content of the surface layer is low or moderate. The root zone is moderately deep. The depth to sandstone bedrock is 20 to 40 inches.

Included with this Lily soil are small areas of Christian, Frankstown, Pricetown, and Teddy soils. Included soils make up about 10 to 15 percent of this map unit.

Most of the acreage of this Lily soil is used for cultivated crops, hay, or pasture. A few areas are used for woodland.

This soil is well suited to all of the commonly grown row crops and small grains. The hazard of erosion is moderate if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Tilth and organic matter can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to all of the hay and pasture plants that are commonly grown in the survey area. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is well suited to woodland, but only a few areas are used for timber production. The common trees are black oak, yellow-poplar, shortleaf pine, and blackgum. Some of the species preferred for planting are shortleaf pine, yellow-poplar, northern red oak, and white oak. Plant competition is a management concern. Reforestation may require careful management to reduce competition from undesirable plants.

This soil is suited to most urban uses. The depth to bedrock and seepage are limitations affecting most sanitary facilities. The depth to bedrock is a limitation affecting building site developments. Some limitations may be overcome by proper engineering designs and techniques.

This soil is in capability subclass 2e.

LlC—Lily loam, 6 to 12 percent slopes

This moderately deep, well drained soil is on sloping ridgetops and upper side slopes in the uplands, mainly in the Pennyroyal region of the survey area. Individual areas range from about 5 to 30 acres in size.

Typically, the surface layer of this soil is brown loam about 6 inches thick. The subsoil extends to a depth of about 36 inches. It is strong brown loam in the upper part and strong brown clay loam in the lower part. Below this is 3 inches of soft brown sandstone. Below that is hard sandstone.

Permeability is moderately rapid. The available water capacity is moderate. Runoff is low. This soil can be easily tilled. The organic matter content of the surface layer is low or moderate. The root zone is moderately deep. The depth to sandstone bedrock is 20 to 40 inches.

Included with this Lily soil are small areas of Christian, Frankstown, and Pricetown soils. Included soils make up about 10 to 15 percent of this map unit.

Most of the acreage of this Lily soil is used for cultivated crops, hay, or pasture. A few areas are used for woodland.

This soil is suited to all of the commonly grown row crops and small grains. The hazard of erosion is severe if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion,

conserve soil moisture, and improve water quality. Tilth and organic matter can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to all of the hay and pasture plants that are commonly grown in the survey area. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is well suited to woodland, but only a few areas are used for timber production. The common trees are black oak, yellow-poplar, shortleaf pine, and blackgum. Some of the species preferred for planting are shortleaf pine, yellow-poplar, northern red oak, and white oak. Plant competition is a management concern. Reforestation may require careful management to reduce competition from undesirable plants.

This soil is suited to some urban uses. The depth to bedrock, seepage, and slope are limitations affecting most sanitary facilities. The depth to bedrock and the slope are limitations affecting building site developments. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 3e.

LoB—Lowell silt loam, 2 to 6 percent slopes

This deep and very deep, well drained, gently sloping soil is on convex ridgetops in the uplands, mainly in the Hills of the Bluegrass and Outer Bluegrass regions of the survey area. Individual areas range from about 5 to 80 acres in size.

Typically, the surface layer of this soil is brown silt loam about 8 inches thick. The subsoil extends a depth of about 52 inches. It is dark yellowish brown silty clay in the upper part, strong brown clay in the middle part, and dark yellowish brown clay in the lower part. Below this is hard limestone.

Permeability is moderately slow. The available water capacity is high. Runoff is low. This soil can be easily tilled. The content of organic matter in the surface layer is moderate. The root zone is deep or very deep. The shrink-swell potential is moderate. The depth to bedrock is 40 to 80 inches.

Included with this Lowell soil in mapping are small areas of Beasley, Faywood, Nicholson, and Sandview soils. Also included are a few small areas of moderately eroded Lowell soils that have a surface layer of silty clay loam. Included soils make up about 10 to 15 percent of this map unit.

Most areas of the Lowell soil are used for cultivated crops, hay, and pasture.

This soil is well suited to all of the commonly grown row crops and small grains. The hazard of erosion is moderate if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Tilth can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to all of the hay and pasture plants commonly grown in the survey area. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is well suited to woodland, but few areas are used for timber production. The common trees are black oak, black locust, hickory, and sugar maple. Some species preferred for planting include white oak, yellow-poplar, and eastern white pine. Plant competition is a management concern. Reforestation can be severely limited because of competition from undesirable understory plants.

This soil is suited to most urban uses. The moderately slow permeability, a high content of clay, the depth to bedrock, and moderate shrink-swell potential are limitations affecting most sanitary facilities and building site developments. Low soil strength is a limitation on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 2e.

LoC2—Lowell silt loam, 6 to 12 percent slopes, eroded

This deep and very deep, well drained, sloping soil is on side slopes and ridgetops, mainly in the Hills of the Bluegrass and Outer Bluegrass regions of the survey area. Individual areas range from about 5 to 80 acres in size.

Typically, the surface layer of this soil is brown silt loam about 6 inches thick. The subsoil extends a depth of about 52 inches. It is dark yellowish brown silty clay in the upper part, strong brown clay in the middle part, and dark yellowish brown clay in the lower part. Below this is hard limestone.

Permeability is moderately slow. The available water capacity is high. Runoff is medium. This soil can be easily tilled. The content of organic matter in the surface layer is moderate. The root zone is deep or very deep. The shrink-swell potential is moderate. The depth to bedrock is 40 to 80 inches.

Included with this Lowell soil in mapping are small areas of Beasley, Faywood, and Sandview soils. Also included are areas of severely eroded Lowell soils that have a surface layer of silty clay loam. Included soils make up about 10 to 15 percent of this map unit.

Some areas of the Lowell soil are used for cultivated crops, hay, and pasture. A few areas are used for woodland.

This soil is suited to all of the commonly grown cultivated crops and small grains. The hazard of erosion is severe if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Tilth can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to all of the hay and pasture plants commonly grown in the survey area. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is well suited to woodland, but few areas are used for timber production. The common trees are black oak, black locust, hickory, and sugar maple. Some species preferred for planting are white oak, yellow-poplar, and eastern white pine. Plant competition is a management concern. Reforestation can be severely limited because of competition from undesirable understory plants.

This soil is suited to most urban uses. The moderately slow permeability, the depth to bedrock, the slope, and a high content of clay are limitations affecting most sanitary facilities. The high content of clay, the depth to bedrock, the slope, and the moderate shrink-swell potential are limitations affecting building site developments. Low soil strength is a limitation on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 3e.

LpD2—Lowell-Faywood complex, 12 to 25 percent slopes, eroded, rocky

These very deep to moderately deep, well drained, moderately steep soils are on convex side slopes in the uplands, mainly in the Hills of the Bluegrass and Outer Bluegrass regions of the survey area. Limestone ledges and scattered areas of exposed bedrock cover about 0.5 to 2.0 percent of the surface. Erosion has removed about 25 to 75 percent of the original surface layer. Individual areas range from about 5 to 70 acres in size. Lowell and similar soils make up about 55 percent of this complex, and Faywood and similar soils make up about 30 percent.

Typically, the surface layer of this Lowell soil is brown silt loam about 6 inches thick. The subsoil extends a depth of about 52 inches. It is dark yellowish brown silty clay in the upper part, strong brown clay in the middle part, and dark yellowish brown clay in the lower part. Below this is hard limestone.

Permeability of the Lowell soil is moderately slow. The available water capacity is high. Runoff is high. This soil can be easily tilled. The content of organic matter in the surface layer is moderate. The root zone is deep or very deep. The shrink-swell potential is moderate. The depth to bedrock is 40 to 80 inches.

Typically, the surface layer of this Faywood soil is brown silty clay loam about 6 inches thick. The subsoil extends to a depth of about 30 inches and is dark yellowish brown, yellowish brown, and light olive brown clay. Below this is hard limestone.

Permeability of the Faywood soil is moderately slow or slow. The available water capacity is moderate. Runoff is high. This soil is somewhat difficult to till because the clayey subsoil has been mixed with the surface layer. The organic matter content in the surface layer is low. The root zone is moderately deep. The shrink-swell potential is moderate. The depth to limestone bedrock is 20 to 40 inches.

Included with these soils in mapping are small areas of Eden, Fairmount, and Faywood soils. Also included are areas of severely eroded Lowell soils. Included soils make up about 15 percent of this map unit.

Most areas of the Lowell and Faywood soils are used for hay and pasture. A few areas are used as woodland.

These soils are poorly suited to cultivated crops because of the slope and rock outcrops. The hazard of erosion is very severe if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to

minimize erosion, conserve soil moisture, and improve water quality. Tilth can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

These soils are suited to pasture and poorly suited to hay. The rock outcrops and the slope can make mowing and renovation difficult. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

These soils are suited to woodland, but few areas are used for timber production. The common trees are black oak, northern red oak, and sugar maple. Some species preferred for planting on the Lowell soil are white oak, yellow-poplar, and eastern white pine. Some species preferred for planting on the Faywood soil are white oak, eastern white pine, and northern red oak. The hazard of erosion, the equipment limitation, and plant competition are management concerns in areas of both soils. Reforestation may require careful management to ensure the survival of seedlings and to reduce competition from undesirable understory plants.

These soils are poorly suited to most urban uses because of the slope, the depth to bedrock, the slow permeability, the moderate shrink-swell potential, and low soil strength. Some limitations can be overcome by proper engineering designs and techniques.

These soils are in capability subclass 4e.

LsB—Lowell silt loam, phosphatic, 2 to 6 percent slopes

This deep and very deep, well drained, gently sloping soil is on broad ridgetops in the uplands, mainly in the Inner Bluegrass region of the survey area. Individual areas range from about 5 to 60 acres in size.

Typically, the surface layer of this soil is brown silt loam about 8 inches thick. The subsoil extends a depth of about 52 inches. It is dark yellowish brown silty clay in the upper part, strong brown clay in the middle part, and dark yellowish brown clay in the lower part. Below this is hard limestone bedrock.

Permeability is moderately slow. The available water capacity is high. Runoff is low. This soil can be easily tilled. The content of organic matter in the surface layer is moderate. In many areas this soil is high in phosphates. The root zone is deep or very deep. The shrink-swell potential is moderate. The depth to bedrock is 40 to 80 inches.

Included with this soil in mapping are small areas of Faywood phosphatic, Nicholson, and Sandview phosphatic soils. Also included are areas of moderately eroded Lowell phosphatic soils that have a surface layer of silty clay loam. Included soils make up about 10 to 15 percent of this map unit.

Most areas of this Lowell soil are used for cultivated crops, hay, or pasture. Many horse farms in Garrard County are on Lowell phosphatic soils.

This soil is well suited to all of the commonly grown row crops and small grains. The hazard of erosion is moderate if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Tilth can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to all of the hay and pasture plants commonly grown in the survey area. The phosphatic content of the soil makes the grass ideally suited to race horses. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is well suited to woodland, but few areas are used for timber production. The common trees are black oak, black locust, hickory, and sugar maple. Some species preferred for planting are white oak, yellow-poplar, and eastern white pine. Plant competition is a management concern. Reforestation can be severely limited because of competition from undesirable understory plants.

This soil is suited to some urban uses. The moderately slow permeability, the slope, a high clay content, the depth to bedrock, and the moderate shrink-swell potential are limitations affecting most sanitary facilities and building site developments. Low soil strength is a limitation affecting local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 2e.

LsC2—Lowell silt loam, phosphatic, 6 to 12 percent slopes, eroded

This deep and very deep, well drained, sloping soil is on side slopes and convex ridgetops in the uplands, mainly in the Inner Bluegrass region of the survey

Figure 17.—Pasture in an area of Lowell silt loam, phosphatic, 6 to 12 percent slopes, eroded.

area. Individual areas range from about 3 to 60 acres in size.

Typically, the surface layer of this soil is brown silt loam about 6 inches thick. The subsoil extends to a depth of about 52 inches. It is dark yellowish brown silty clay in the upper part, strong brown clay in the middle part, and dark yellowish brown clay in the lower part. Below this is hard limestone bedrock.

Permeability is moderately slow. The available water capacity is high. Runoff is medium. This soil can be easily tilled. The content of organic matter in the surface layer is moderate. In many areas this soil is high in phosphates. The root zone is deep or very deep. The shrink-swell potential is moderate. The depth to bedrock is 40 to 80 inches.

Included with this soil in mapping are small areas of Faywood phosphatic, Nicholson, and Sandview phosphatic soils. Also included are areas of moderately eroded Lowell phosphatic soils that have a surface layer of silty clay loam. Included soils make up about 10 to 15 percent of this map unit.

Most areas of this Lowell soil are used for cultivated crops, hay, or pasture. Many horse farms in Garrard County are on phosphatic Lowell soils (fig. 17).

This soil is suited to all of the commonly grown row crops and small grains. The hazard of erosion is moderate if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping,

and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Tilth can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to all of the hay and pasture plants commonly grown in the survey area. The phosphatic content of this soil makes the grass ideally suited to race horses. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is well suited to woodland, but few areas are used for timber production. The common trees are black oak, black locust, hickory, and sugar maple. Some species preferred for planting include white oak, yellow-poplar, and eastern white pine. Plant competition is a management concern. Reforestation can be severely limited because of competition from undesirable understory plants.

This soil is suited to some urban uses. The moderately slow permeability, the depth to bedrock, the slope, and a high content of clay are limitations affecting most sanitary facilities. The high content of clay, the depth to bedrock, the slope, and the shrink-swell potential are limitations affecting building site developments. Low soil strength is a limitation on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 3e.

LtD2—Lowell-Faywood complex, phosphatic, 12 to 25 percent slopes, eroded

These deep and moderately deep, well drained, moderately steep soils are on convex side slopes in the uplands, mainly in the Inner Bluegrass region of the survey area. Erosion has removed about 25 to 75 percent of the original surface layer. Individual areas range from about 3 to 70 acres in size. Lowell and similar soils make up about 55 percent of this complex, and Faywood and similar soils make up about 35 percent.

Typically, the surface layer of this Lowell soil is brown silt loam about 6 inches thick. The subsoil extends to a depth of about 52 inches. It is dark yellowish brown silty clay in the upper part, strong brown clay in the middle part, and dark yellowish brown clay in the lower part. Below this is hard limestone bedrock.

Permeability of the Lowell soil is moderately slow. The available water capacity is high. Runoff is high. This soil can be easily tilled. The content of organic matter in the surface layer is moderate. In many areas this soil is high in phosphates. The root zone is deep or very deep. The shrink-swell potential is moderate. The depth to bedrock is 40 to 80 inches.

Typically, the surface layer of this Faywood soil is brown silty clay loam about 6 inches thick. The subsoil extends to a depth of about 30 inches and is dark yellowish brown, yellowish brown, and light olive brown clay.

Permeability of the Faywood soil is moderately slow or slow. The available water capacity is moderate. Runoff is high. This soil is somewhat difficult to till because the clayey subsoil has been mixed with the surface layer. The organic matter content in the surface layer is low. In many areas this soil is high in phosphates. The root zone is moderately deep. The shrink-swell potential is moderate. The depth to limestone bedrock is 20 to 40 inches.

Included with these soils in mapping are small areas of Eden, Fairmount, and Faywood soils. Also included are areas of severely eroded Lowell soils. Included soils make up about 10 percent of this map unit.

Most areas of the Lowell and Faywood soils are used for hay and pasture. A few areas are used as woodland. Many horse farms in Garrard County are on phosphatic Lowell and Faywood soils.

These soils are poorly suited to cultivated crops because of the slope. The hazard of erosion is very severe if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Tilth can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

These soils are suited to pasture and poorly suited to hay. The slope can make mowing and renovation difficult. The phosphatic content of these soils makes the grass ideally suited to race horses. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

These soils are suited to woodland, but few areas are used for timber production. The common trees are black oak, northern red oak, and sugar maple. Some

species preferred for planting on the Lowell soil are white oak, yellow-poplar, and eastern white pine. Some species preferred for planting on the Faywood soil are white oak, eastern white pine, and northern red oak. The hazard of erosion, the equipment limitation, and plant competition are management concerns in areas of both soils. Steep skid trails and roads are subject to washing and gullying unless protected by water bars, plant cover, or both. Reforestation may require careful management to ensure the survival of seedlings and to reduce competition from undesirable understory plants.

These soils are poorly suited to most urban uses because of the slope, the depth to bedrock, the slow permeability, the moderate shrink-swell potential, and low soil strength. Some limitations can be overcome by proper engineering designs and techniques.

These soils are in capability subclass 4e.

Me—Melvin silt loam, frequently flooded

This very deep, poorly drained, nearly level soil is on flood plains, mainly along the Dix and Green Rivers and their tributaries in Lincoln County. Slopes range from 0 to 2 percent. Individual areas range from about 5 to 125 acres in size.

Typically, the surface layer of this soil is brown silt loam about 8 inches thick. The subsoil extends to a depth of about 22 inches and is light gray silt loam. The substratum, to a depth of about 65 inches, is light gray silt loam.

Permeability is moderate. The available water capacity is high. Runoff is negligible. The soil can be easily tilled. The organic matter content of the surface layer is low or moderate. The root zone is very deep. A seasonal high water table is within a depth of 1 foot. The depth to bedrock is more than 60 inches. This soil is subject to frequent flooding for brief duration during late winter and spring.

Included with this soil in mapping are small areas of Newark, Nolin, Robertsville, and Yosemite soils. Also included are some small areas of very poorly drained soils. Included soils make up about 5 to 10 percent of this map unit.

Most areas of this Melvin soil are used for cultivated crops, hay, or pasture. A few areas are used for woodland.

Where this soil has been previously drained and in cultivation, it is suited to most cultivated crops. It is poorly suited to small grains because of the high water table and the flooding in late winter and spring. Because of the wetness, tillage is delayed in undrained areas. Tile drains and open ditches may improve internal drainage. These drainage systems should only be used in areas that were previously cultivated. They can help to lengthen the effective growing season, reduce the length of time that farming is delayed, and increase the range of suitable plants. Tilth can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is suited to hay and pasture plants that can tolerate wetness and withstand flooding for brief periods. Where previously drained, the soil is well suited to a wide range of pasture plants. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is suited to water-tolerant woodland species, but few areas are used for timber production. The common trees are pin oak, sweetgum, and red maple. The species preferred for planting include pin oak, sweetgum, and willow oak. The equipment limitation, seedling mortality, and plant competition are management concerns. The seasonal high water restricts the use of equipment to periods when the soil is dry. Seedlings selected for planting should be those that can tolerate seasonal wetness and flooding for short periods. Reforestation may require careful management to reduce competition from undesirable plants.

This soil is unsuited to most urban uses because of the flooding, low soil strength, and seasonal wetness. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 4w.

MoB—Monongahela loam, 2 to 6 percent slopes

This very deep, moderately well drained, gently sloping soil is on low stream terraces along the Kentucky River and its tributaries. Individual areas range from about 5 to 45 acres in size.

Typically, the surface layer of this soil is brown loam about 9 inches thick. The subsoil extends to a depth of about 65 inches. It is yellowish brown loam with gray mottles in the upper part, a firm compact fragipan of yellowish brown with gray mottles in the middle part, and yellowish brown loam with gray mottles in the lower part.

Permeability is moderate above the fragipan and very slow in the fragipan. The available water capacity is moderate. Runoff is low. This soil is easily tilled. The

organic matter content of the surface layer is low or moderate. The root zone is moderately deep to the fragipan. A seasonal high water table is perched at a depth of 1.5 to 2.5 feet. The depth to bedrock is more than 60 inches.

Included with this soil in mapping are small areas of Allegheny, Elk, Lawrence, and Nolin soils. Also included are a few small areas of Monongahela soils that have slopes of more than 6 percent and areas of Monongahela soils that are subject to rare flooding. Included soils make up about 10 percent of this map unit.

Most areas of this Monongahela soil are used for cultivated crops, hay, or pasture. A few areas are used as woodland.

This soil is well suited to all of the commonly grown row crops and small grains. Because of the wetness, tillage may be delayed in the spring. In some places diversions help to control runoff and overwash from the adjacent hills. The hazard of erosion is moderate if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Tilth can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is suited to most of the hay and pasture plants commonly grown in the survey area. Some deep-rooted plants may be affected by the wetness. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is well suited to woodland, but few areas are used for timber production. The common trees are northern red oak, sweetgum, and yellow-poplar. The species preferred for planting include yellow-poplar, shortleaf pine, and white oak. Plant competition is a management concern. Reforestation may require careful management to reduce competition from undesirable plants.

This soil is suited to some urban uses. The wetness and the very slow permeability are limitations on sites for sanitary facilities. The wetness is a limitation affecting building site developments. Low soil strength is a limitation on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 2e.

Ne—Newark silt loam, frequently flooded

This very deep, somewhat poorly drained, nearly level soil is on flood plains throughout the survey area. Slopes range from 0 to 2 percent. Individual areas range from about 5 to 150 acres in size.

Typically, the surface layer of this soil is brown silt loam about 8 inches thick. The subsoil extends to a depth of about 39 inches. It is yellowish brown silt loam with gray mottles in the upper part and grayish brown silt loam in the lower part. The substratum is light brownish gray silty clay loam to a depth of about 62 inches.

Permeability is moderate. The available water capacity is high. Runoff is negligible. The soil can be easily tilled. The organic matter content of the surface layer is low or moderate. The root zone is very deep. A seasonal high water table is at a depth of 1.0 to 1.5 feet. The depth to bedrock is more than 60 inches. This soil is frequently flooded for brief periods during late winter and spring.

Included with this soil in mapping are small areas of Lawrence, Melvin, Nolin, Skidmore, and Yosemite soils. Included soils make up about 10 to 15 percent of this map unit.

Most areas of this Newark soil are used for cultivated crops, hay, or pasture. A few areas are used for woodland.

Where this soil is drained, it is well suited to cultivated crops. Flooding and wetness sometimes damage small grain crops during winter and spring. Because of the wetness, tillage is delayed in undrained areas. Tile drains and open ditches may improve internal drainage. In some places diversions help to control surface runoff and overwash from adjacent soils. Tilth can be maintained or improved by returning crop residue to the soil, growing green manure crops, using conservation tillage, and including grasses and legumes in the cropping sequence.

This soil is well suited to pasture and hay plants that can withstand wetness and flooding for short periods. If drained, the soil is suited to a wide range of pasture and hay plants. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is suited to woodland, but only a few areas are used for timber production. The common trees are pin oak, sweetgum, and green ash. The species preferred for planting include American sycamore, sweetgum, and green ash. The equipment limitation, seedling mortality, and plant competition are

management concerns. The use of some types of equipment may be limited by wetness. Reforestation may require careful management to ensure the survival of seedlings and to reduce competition from undesirable understory plants.

This soil is unsuited to urban uses because of flooding, wetness, and low soil strength. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 3w.

NhB—Nicholson silt loam, 2 to 6 percent slopes

This very deep, moderately well drained, gently sloping soil is on broad ridgetops in the uplands, mainly in the Hills of the Bluegrass, Inner Bluegrass, and Outer Bluegrass regions of the survey area. Individual areas range from about 5 to 55 acres in size.

Typically, the surface layer of this soil is brown silt loam about 8 inches thick. The subsoil extends to a depth of about 65 inches. It is dark yellowish brown and yellowish brown silt loam in the upper part, a firm, compact fragipan of yellowish brown silty clay loam with gray mottles in the middle part, and yellowish brown clay with gray mottles in the lower part.

Permeability is moderate above the fragipan and very slow in the fragipan. The available water capacity is moderate. Runoff is low. The soil can be easily tilled. The organic matter content of the surface layer is low or moderate. The root zone is moderately deep because of the fragipan. A seasonal high water table is at a depth of 1.5 to 2.5 feet. The depth to bedrock is 60 inches or more.

Included with this soil in mapping are small areas of Lawrence, Sandview, and Lowell soils. Included soils make up about 10 to 15 percent of the map unit.

Most areas of the Nicholson soil are used for cultivated crops, hay, or pasture. A few areas are used for woodland.

This soil is suited to all of the commonly grown row crops and small grains. Because of the wetness, tillage may be delayed in the spring. In some places diversions help to control runoff and overwash from the adjacent hills. The hazard of erosion is moderate if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Tilth can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is suited to most of the hay and pasture plants that are commonly grown in the survey area. Some deep-rooted plants may be affected by the wetness. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is suited to woodland, but few areas are used for timber production. The common trees are black oak, hickory, and yellow-poplar. The species preferred for planting include eastern white pine, white oak, and yellow-poplar. Plant competition is a management concern. Reforestation may require careful management to reduce competition from undesirable plants.

This soil is suited to some urban uses. The wetness and very slow permeability are limitations on sites for sanitary facilities. The wetness is a limitation affecting building site developments. Low soil strength is a limitation on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 2e.

NhC2—Nicholson silt loam, 6 to 12 percent slopes, eroded

This very deep, moderately well drained, sloping soil is on ridgetops in the uplands, mainly in the Hills of the Bluegrass, Inner Bluegrass, and Outer Bluegrass regions of the survey area. Individual areas range from about 5 to 55 acres in size.

Typically, the surface layer of this soil is brown silt loam about 6 inches thick. The subsoil extends to a depth of about 65 inches. It is dark yellowish brown and yellowish brown silt loam in the upper part, a firm, compact fragipan of yellowish brown silty clay loam with gray mottles in the middle part, and yellowish brown clay with gray mottles in the lower part.

Permeability is moderate above the fragipan and very slow in the fragipan. The available water capacity is moderate. Runoff is medium. The soil can be easily tilled. The organic matter content of the surface layer is low or moderate. The root zone is moderately deep because of the fragipan. A seasonal high water table is at a depth of 1.5 to 2.5 feet. The depth to bedrock is 60 inches or more.

Included with this soil in mapping are small areas of Lawrence, Sandview, and Lowell soils. Included soils make up about 10 to 15 percent of the map unit.

Most areas of this Nicholson soil are used for cultivated crops, hay, or pasture. A few areas are used as woodland.

This soil is suited to most of the commonly grown row crops and small grains. Because of the wetness, tillage may be delayed in the spring. In some places diversions help to control runoff and overwash from the adjacent hills. The hazard of erosion is severe if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Tilth can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is suited to most of the hay and pasture plants that are commonly grown in the survey area. Some deep-rooted plants may be affected by the wetness. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is suited to woodland, but few areas are used for timber production. The common trees are black oak, hickory, and yellow-poplar. The species preferred for planting include eastern white pine, white oak, and yellow-poplar. The hazard of erosion and plant competition are management concerns. Steep skid trails and roads are subject to gullying unless protected by water bars or plant cover, or both. Reforestation may require careful management to reduce competition from undesirable plants.

This soil is suited to some urban uses. The wetness, slope, and very slow permeability are limitations on sites for sanitary facilities. The wetness and slope are limitations affecting building site developments. Low soil strength is a limitation on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 3e.

No—Nolin silt loam, frequently flooded

This very deep, well drained, nearly level soil is on flood plains throughout the survey area. Slopes range from 0 to 2 percent. Individual areas range from about 5 to 140 acres in size.

Typically, the surface layer of this soil is brown silt loam about 8 inches thick. The subsoil extends to a depth of about 46 inches and is dark yellowish brown silt loam. The substratum, to a depth of about 60 inches, is dark yellowish brown silt loam.

Permeability is moderate. The available water capacity is high. Runoff is negligible. The soil can be easily tilled. The organic matter content of the surface layer is moderate. The root zone is very deep. A seasonal high water table is at a depth of 3 feet or more. The depth to bedrock is more than 60 inches. This soil is frequently flooded for brief duration during late winter and spring.

Included with this soil in mapping are small areas of Newark, Skidmore, and Yosemite soils. Also included are a few areas of soils that are similar to the Nolin soil but have a thick dark brown surface layer and areas adjacent to streambanks that have slopes of 2 to 12 percent. Included soils make up about 5 to 10 percent of this map unit.

Most areas of this Nolin soil are used for cultivated crops or hay. A few areas are used for pasture. Areas along streambanks are mostly used for woodland.

This soil is well suited to most of the commonly grown row crops and small grains (fig. 18). Flooding during winter and spring can damage small grain cover crops and corn. Tilth can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to pasture and hay plants that can withstand flooding for brief periods. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is well suited to woodland, but few areas are used for timber production. The common trees are yellow-poplar, river birch, sweetgum, and American sycamore. The species preferred for planting include black walnut, yellow-poplar, and eastern white pine. Plant competition and seedling mortality are management concerns. Reforestation may require careful management to reduce competition from undesirable plants.

This soil is unsuited to most urban uses because of the flooding and low soil strength. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 2w.

OtB—Otwell silt loam, 2 to 6 percent slopes

This very deep, moderately well drained, gently sloping soil is on stream terraces along major streams

Figure 18.—Tobacco in an area of Nolin silt loam, frequently flooded.

throughout the survey area. Individual areas range from about 5 to 45 acres in size.

Typically, the surface layer of this soil is brown silt loam about 7 inches thick. The subsoil extends to a depth of about 65 inches. It is yellowish brown silty clay loam in the upper part, a firm, compact fragipan of yellowish brown silty clay loam with gray mottles in the middle part, and yellowish brown silty clay with gray mottles in the lower part.

Permeability is moderate above the fragipan and very slow in the fragipan. The available water capacity is moderate. Runoff is low. The soil can be easily tilled. The organic matter content of the surface layer is low or moderate. The root zone is moderately deep to the fragipan. The perched water table is at a depth of 1.5 to 2.5 feet. The depth to bedrock is more than 60 inches.

Included with this soil in mapping are small areas of Elk, Newark, and Lawrence soils. Also included are a few areas of Otwell soils that have slopes of more than 6 percent. Included soils make up about 5 to 10 percent of this map unit.

Most areas of this Otwell soil are used for cultivated crops, hay, or pasture. A few areas are used for woodland.

This soil is well suited to most of the commonly grown row crops and small grains. Some deep-rooted plants may be affected by the wetness. Because of the wetness, tillage may be delayed in the spring. In some places, diversions help to control runoff and overwash from the adjacent hills. The hazard of erosion is moderate if a conventional tillage system is used. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to control erosion, conserve soil moisture, and improve water quality. Tilth can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to most of the hay and

pasture plants that are commonly grown in the survey area. Some deep-rooted plants may be affected by the wetness. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is well suited to woodland, but few areas are used for timber production. The common trees are yellow-poplar, white oak, and blackgum. The species preferred for planting include yellow-poplar, white oak, and eastern white pine. Seedling mortality is a management concern. Reforestation may require careful management to ensure the survival of seedlings.

This soil is suited to some urban uses. The wetness and very slow permeability are limitations on sites for most sanitary facilities. The wetness is a limitation affecting building site developments. Low soil strength is a limitation on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 2e.

OwB—Otwell silt loam, 2 to 6 percent slopes, rarely flooded

This very deep, moderately well drained, gently sloping soil is on low stream terraces along major streams and their tributaries throughout the survey area. Individual areas range from about 5 to 45 acres in size.

Typically, the surface layer of this soil is brown silt loam about 7 inches thick. The subsoil extends to a depth of about 65 inches. It is yellowish brown silty clay loam in the upper part, a firm, compact fragipan of yellowish brown silty clay loam with gray mottles in the middle part, and yellowish brown silty clay with gray mottles in the lower part.

Permeability is moderate above the fragipan and very slow in the fragipan. The available water capacity is moderate. Runoff is low. The soil can be easily tilled. The organic matter content of the surface layer is low or moderate. The root zone is moderately deep because of the fragipan. The seasonal high water table is at a depth of 1.5 to 2.5. The depth to bedrock is more than 60 inches. This soil is rarely flooded for brief periods in late winter and spring.

Included with this soil in mapping are small areas of Elk, Newark, and Lawrence soils. Also included are a few areas of Otwell soils that do not flood. Included soils make up about 5 to 10 percent of this map unit.

This Otwell soil is well suited to most of the commonly grown row crops and small grains. Some deep-rooted plants may be affected by the wetness. Because of the wetness, tillage may be delayed in the spring. In some places, diversions help to control runoff and overwash from the adjacent hills. The hazard of erosion is severe if a conventional tillage system is used. Contour farming, stripcropping, and conservation tillage help to help control erosion, conserve soil moisture, and improve water quality. Tilth can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to most of the hay and pasture plants that are commonly grown in the survey area. Some deep-rooted plants may be affected by the wetness. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is well suited to woodland, but few areas are used for timber production. The common trees are yellow-poplar, white oak, and blackgum. The species preferred for planting include yellow-poplar, white oak, and eastern white pine. Seedling mortality is a management concern. Reforestation may require careful management to ensure the survival of seedlings.

This soil is unsuited to most urban uses. The flooding, wetness, and very slow permeability are limitations on sites for most sanitary facilities and building site developments. Low soil strength is a limitation on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 2e.

PrB—Pricetown silt loam, 2 to 6 percent slopes

This very deep, well drained, gently sloping soil is on broad ridgetops in the uplands, mainly in the Pennyroyal region of the survey area. Individual areas range from about 5 to 215 acres in size.

Typically, the surface layer of this soil is brown silt loam about 9 inches thick. The subsoil extends to a depth of about 65 inches. The upper part of the subsoil is yellowish brown and strong brown silty clay loam. The lower part is reddish brown silty clay.

Permeability is moderate. The available water capacity is high. Runoff is low. The soil is easily tilled. The organic matter content of the surface layer is moderate. The root zone is very deep. The shrink-swell potential is moderate in the lower part of the subsoil. The depth to bedrock is more than 60 inches.

Included with this soil in mapping are small areas of

Christian, Frankstown, and Teddy soils. Also included are a few moderately eroded areas of Pricetown soils and small areas of a soil that is similar to the Pricetown soil but has more sand in the subsoil and is underlain by sandstone bedrock. Included soils make up about 5 to 10 percent of the map unit.

Most areas of this Pricetown soil are used for cultivated crops, hay, or pasture. A few areas are used as woodland.

This soil is well suited to all of the commonly grown row crops and small grains. The hazard of erosion is moderate if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Tilth can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to all of the hay and pasture plants that are commonly grown in the survey area, especially alfalfa. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is well suited to woodland, but few areas are used for timber production. The common trees are white oak, yellow-poplar, and hickory. The species preferred for planting include shortleaf pine, white ash, and white oak. Plant competition is a management concern. Reforestation may require careful management to reduce competition from undesirable plants.

This soil is well suited to most urban uses. The moderate permeability and a high content of clay are limitations affecting some sanitary facilities. The high clay content and the shrink-swell potential are limitations affecting some building site developments. Low soil strength is a limitation on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 2e.

PrC—Pricetown silt loam, 6 to 12 percent slopes

This very deep, well drained, sloping soil is on convex ridgetops and side slopes in the uplands, mainly in the Pennyroyal region of the survey area. Individual areas range from about 5 to 215 acres in size.

Typically, the surface layer of this soil is brown silt loam about 9 inches thick. The subsoil extends to a depth of about 65 inches. The upper part of the subsoil is yellowish brown and strong brown silty clay loam. The lower part is reddish brown silty clay.

Permeability is moderate. The available water capacity is high. Runoff is medium. The soil can be easily tilled. The organic matter content of the surface layer is moderate. The root zone is very deep. The shrink-swell potential is moderate in the lower part of the subsoil. The depth to bedrock is more than 60 inches.

Included with this soil in mapping are small areas of Christian, Frankstown, and Teddy soils. Also included are a few moderately eroded areas of Pricetown soils. Included soils make up about 10 to 15 percent of the map unit.

Most areas of this Pricetown soil are used for cultivated crops, hay, or pasture. A few areas are used as woodland.

This soil is suited to all of the commonly grown cultivated crops and small grains. The hazard of erosion is severe if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Tilth can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to all of the hay and pasture plants that are commonly grown in the survey area, especially alfalfa. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is well suited to woodland, but few areas are used for timber production. The common trees are yellow-poplar, white oak, and hickory. The species preferred for planting include white oak, white ash, and shortleaf pine. Plant competition is a management concern. Reforestation may require careful management to reduce competition from undesirable plants.

This soil is suited to most urban uses. The moderate permeability, slope, and a high content of clay are limitations affecting some sanitary facilities.

The high content of clay, the slope, and the shrink-swell potential are limitations affecting some building site developments. Low soil strength is a limitation on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 3e.

Rb—Robertsville silt loam, terrace, rarely flooded

This very deep, poorly drained soil is on nearly level, low stream terraces, mainly along the Dix and Green Rivers and their major tributaries. Slopes range from 0 to 2 percent. Individual areas range from about 5 to 45 acres in size.

Typically, the surface layer of this soil is light brownish gray silt loam about 6 inches thick. The subsoil extends to a depth of about 48 inches. The upper part of the subsoil is gray silt loam. The middle part is a firm, compact gray silt loam fragipan. The lower part is gray silty clay loam. The substratum, to a depth of about 62 inches, is light gray silty clay loam.

Permeability is moderate above the fragipan and very slow in the fragipan. The available water capacity is moderate. Runoff is very low. The soil can be easily tilled. The organic matter content of the surface layer is moderate. The root zone is moderately deep to the fragipan. The seasonal high water table is within a depth of 1 foot. The depth to bedrock is more than 60 inches. The soil is subject to rare flooding in late winter and spring.

Included with this soil in mapping are small areas of Lawrence, Melvin, and Newark soils. Included soils and other areas make up about 5 to 10 percent of this map unit.

Most areas of the Robertsville soil are used for pasture. Some areas are used for hay or cultivated crops. A few areas are used for woodland.

Where this soil has been previously drained and in cultivation, it is suited to some cultivated crops. It is poorly suited to small grains because of the high water table and the hazard of flooding in late winter and spring. Because of the wetness, tillage is delayed in undrained areas. Tile drains and open ditches may improve internal drainage. These drainage systems should only be used in areas that were previously cultivated. They help to lengthen the effective growing season, reduce the length of time that farming is delayed, and increase the range of suitable plants. Tilth can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is suited to pasture and hay plants that can tolerate wetness and withstand flooding for brief periods. If drained, it is well suited to a wide range of pasture plants. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is suited to woodland, but few areas are used for timber production. The common trees are pin oak, sweetgum, and red maple. The species preferred for planting include pin oak, sweetgum, and willow oak. The equipment limitation, seedling mortality, and plant competition are management concerns. The wetness and the flooding during the winter and spring can limit the use of some equipment. Seedlings selected for planting should be those that can tolerate the seasonal wetness. Reforestation may require careful management to reduce competition from undesirable plants.

This soil is unsuited to urban uses because of the flooding, the very slow permeability, and the wetness. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 4w.

RoF—Rock outcrop-Fairmount complex, 50 to 120 percent slopes

This map unit consists of areas of Rock outcrop and the shallow, well drained, very steep Fairmount soil. It is mainly on side slopes adjacent to major creeks and streams. This unit is scattered throughout Inner Bluegrass, Outer Bluegrass, and Hills of the Bluegrass regions of the survey area. In areas along the Kentucky River, it forms part of the Kentucky Palisades. The Rock outcrop and Fairmount soil are so intermingled that they could not be separated at the scale used in mapping. Individual areas range from about 10 to 295 acres in size. Rock outcrop makes up about 55 percent of this complex, and Fairmount and similar soils make up about 30 percent.

Typically, the Rock outcrop occurs as ledges and bluffs of limestone. It is in scattered areas throughout the map unit. In areas along the Kentucky River, the Rock outcrop occurs as steep bluffs with heights of 150 to 300 feet. These areas are part of the Kentucky Palisades.

Typically, the surface layer of this Fairmount soil is dark brown silty clay loam about 9 inches thick. The subsoil extends to a depth of about 18 inches and is dark yellowish brown flaggy silty clay. Below this is limestone bedrock.

Permeability of the Fairmount soil is slow. The

available water capacity is low. Runoff is very high. The organic matter content of the surface layer is moderate or high. The root zone is shallow. The shrink-swell potential is moderate. The depth to bedrock is 10 to 20 inches.

Included with this unit in mapping are small areas of Cynthiana, Faywood, and Lowell soils. Also included are areas that have flagstones or boulders on the surface. Included soils make up 15 to 20 percent of this map unit.

Most areas of this map unit are used for woodland. The map unit is not suited to cultivated crops, hay, or pasture because of the Rock outcrop and the slope. The areas used as pasture have sparse to dense stands of eastern redcedar. Some areas are covered with brush and are idle.

The Fairmount soil is suited to woodland. The common trees are black oak, scarlet oak, and eastern redcedar. The species preferred for planting include white oak, white ash, and Virginia pine. The hazard of erosion, the equipment limitation, seedling mortality, and plant competition are management concerns. Steep skid trails and roads are subject to rilling and gullying unless adequate water bars, plant cover, or both protect them. The slope and Rock outcrop limit the use of wheeled and tracked equipment. Cable skidding is generally safer and disturbs the soil less. Reforestation may require careful management to ensure the survival of seedlings and to reduce competition from undesirable understory plants.

This map unit is not suited to urban uses because of the depth to bedrock, slope, Rock outcrop, the slow permeability, and low soil strength. Overcoming these limitations is difficult and expensive.

The Rock outcrop is in capability subclass 8, and the Fairmount soil is in capability subclass 7s.

SaB—Sandview silt loam, 2 to 6 percent slopes

This very deep, well drained, gently sloping soil is on broad ridgetops in the uplands, mainly in the Outer Bluegrass region of the survey area. Individual areas range from about 5 to 215 acres in size.

Typically, the surface layer of this soil is brown silt loam about 10 inches thick. The subsoil extends to a depth of more than 74 inches. It is dark yellowish brown, brown, and strong brown silt loam and silty clay loam in the upper part and strong brown and brown silty clay in the lower part.

Permeability is moderately slow. The available water capacity is high. Runoff is low. The soil can be easily tilled. The organic matter content of the surface layer is moderate. The root zone is very deep. The shrink-swell potential is moderate. The depth to bedrock is more than 60 inches.

Included with this Sandview soil in mapping are small areas of Faywood, Nicholson, Lowell, Beasley, and Crider soils. Also included are small areas of a soil that is similar to the Sandview soil but is less than 60 inches deep to bedrock and a few areas of a moderately eroded Sandview soil. Included soils make up about 15 percent of the map unit.

Most areas of this Sandview soil are used for cultivated crops or hay. A few areas are used for pasture.

This soil is well suited to all of the commonly grown row crops and small grains. The hazard of erosion is moderate if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Tilth can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to all of the hay and pasture plants that are commonly grown in the survey area, especially alfalfa. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is well suited to woodland, but only a few areas are used for timber production. The common trees are northern red oak, white oak, and black walnut. The species preferred for planting include black walnut, northern red oak, white oak, and yellow-poplar. Plant competition is a management concern. Reforestation may require careful management to reduce competition from undesirable plants.

This soil is suited to most urban uses. The moderately slow permeability and a high content of clay are limitations affecting some sanitary facilities. The shrink-swell potential is a limitation affecting some building site developments. Low soil strength is a limitation on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 2e.

SaC—Sandview silt loam, 6 to 12 percent slopes

This very deep, well drained, sloping soil is on convex ridgetops and side slopes in the uplands,

mainly in the Outer Bluegrass region of the survey area. Individual areas range from about 5 to 140 acres in size.

Typically, the surface layer of this soil is brown silt loam about 10 inches thick. The subsoil extends to a depth of more than 74 inches. It is dark yellowish brown, brown, and strong brown silt loam and silty clay loam in the upper part and strong brown and brown silty clay in the lower part.

Permeability is moderately slow. The available water capacity is high. Runoff is medium. The soil can be easily tilled. The organic matter content of the surface layer is moderate. The root zone is very deep. The shrink-swell potential is moderate. The depth to bedrock is more than 60 inches.

Included with this soil in mapping are small areas of Lowell, Beasley, and Crider soils. Also included are a few small areas of a soil that is similar to the Sandview soil but less than 60 inches deep to bedrock and a few areas of a moderately eroded Sandview soil. Included soils make up about 10 to 15 percent of the map unit.

Most areas of this Sandview soil are used for cultivated crops, hay, or pasture.

This soil is suited to all of the commonly grown row crops and small grains. The hazard of erosion is severe if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Tilth can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to hay and pasture plants that are commonly grown in the survey area, especially alfalfa. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is well suited to woodland, but only a few areas are used for timber production. The common trees are northern red oak, white oak, and black walnut. The species preferred for planting include black walnut, northern red oak, white oak, and yellow-poplar. Plant competition is a management concern. Reforestation may require careful management to reduce competition from undesirable plants.

This soil is suited to some urban uses. The moderately slow permeability, the slope, and a high content of clay are limitations affecting some sanitary facilities. The shrink-swell potential and the slope are limitations affecting some building site developments. Low soil strength is a limitation on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 3e.

SdB—Sandview silt loam, phosphatic, 2 to 6 percent slopes

This very deep, well drained, gently sloping soil is on wide, slightly convex ridgetops in the uplands, mainly in the Inner Bluegrass region of survey area. Individual areas range from about 5 to 215 acres in size.

Typically, the surface layer of this soil is brown silt loam about 10 inches thick. The subsoil extends to a depth of more than 74 inches. It is dark yellowish brown, brown, and strong brown silt loam and silty clay loam in the upper part and strong brown and brown silty clay in the lower part.

Permeability is moderately slow. The available water capacity is high. Runoff is low. The soil can be easily tilled. The organic matter content of the surface layer is moderate. In many areas this soil is high in phosphates. The root zone is very deep. The shrink-swell potential is moderate. The depth to bedrock is more than 60 inches.

Included with this Sandview soil in mapping are small areas of Chenault, Faywood phosphatic, and Lowell phosphatic soils. Also included are small areas of a soil that is similar to the Sandview soil but is less than 60 inches deep to bedrock and a few areas of a moderately eroded Sandview soil. Included soils make up about 5 to 10 percent of the map unit.

Most areas of this Sandview soil are used for cultivated crops, hay, and pasture. Many horse farms in the survey area are on phosphatic Sandview soils.

This soil is well suited to all of the commonly grown row crops and small grains. The hazard of erosion is moderate if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Tilth can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to all of the hay and pasture plants that are commonly grown in the survey area, especially alfalfa. The phosphate content of the soil makes the grass ideally suited to race horses.

Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is well suited to woodland, but only a few areas are used for timber production. The common trees are northern red oak, white oak, and black walnut. The species preferred for planting include black walnut, northern red oak, white oak, and yellow-poplar. Plant competition is a management concern. Reforestation may require careful management to reduce competition from undesirable plants.

This soil is suited to some urban uses. The moderately slow permeability and a high content of clay are limitations affecting some sanitary facilities. The shrink-swell potential is a limitation affecting some building site developments. Low soil strength is a limitation on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 2e.

SdC—Sandview silt loam, phosphatic, 6 to 12 percent slopes

This very deep, well drained, sloping soil is on convex ridgetops and side slopes in the uplands, mainly in the Inner Bluegrass region of the survey area. Individual areas range from about 5 to 140 acres in size.

Typically, the surface layer of this soil is brown silt loam about 10 inches thick. The subsoil extends to a depth of more than 74 inches. It is dark yellowish brown, brown, and strong brown silt loam and silty clay loam in the upper part and strong brown and brown silty clay in the lower part.

Permeability is moderately slow. The available water capacity is high. Runoff is medium. The soil can be easily tilled. The organic matter content of the surface layer is moderate. In many areas this soil is high in phosphates. The root zone is very deep. The shrink-swell potential is moderate. The depth to bedrock is more than 60 inches.

Included with this Sandview soil in mapping are small areas of Faywood phosphatic and Lowell phosphatic soils. Also included are a few small areas of a soil that is similar to the Sandview soil but is less than 60 inches to deep bedrock and a few moderately eroded areas of a Sandview phosphatic soil. Included soils make up about 10 to 15 percent of the map unit.

Most areas of this Sandview soil are used for cultivated crops, hay, and pasture (fig. 19). Most horse farms in Garrard County are on phosphatic Sandview soils.

This soil is suited to all of the commonly grown row crops and small grains. The hazard of erosion is severe if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Tilth can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to hay and pasture plants that are commonly grown in the survey area, especially alfalfa. The phosphate content of the soil makes the grass ideally suited to race horses. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is well suited to woodland, but only a few areas are used for timber production. The common trees are northern red oak, white oak, and black walnut. The species preferred for planting include black walnut, northern red oak, white oak, and yellow-poplar. Plant competition is a management concern. Reforestation may require careful management to reduce competition from undesirable plants.

This soil is suited to some urban uses. The moderately slow permeability, the slope, and a high content of clay are limitations affecting some sanitary facilities. The shrink-swell potential and the slope are limitations affecting some building site developments. Low soil strength is a limitation on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 3e.

SeC2—Shrouts silty clay loam, 6 to 12 percent slopes, eroded

This moderately deep, well drained, sloping soil is on convex ridgetops and side slopes in the uplands, mainly in the Outer Bluegrass region of the survey area. Erosion has removed about 25 to 75 percent of the original surface layer. Individual areas range from about 5 to 100 acres in size.

Typically, the surface layer of this soil is dark yellowish brown silty clay loam about 4 inches thick. The subsoil extends to a depth of about 26 inches and is yellowish brown and olive brown mottled silty clay and clay. Below this is soft shale bedrock.

Permeability is slow. The available water capacity is moderate. Runoff is high. This soil is somewhat difficult

Figure 19.—Hay and pasture in an area of Sandview silt loam, phosphatic, 2 to 6 percent slopes, and Sandview silt loam, phosphatic, 6 to 12 percent slopes.

to till because of the high content of clay in the surface layer. The organic matter content of the surface layer is low. The root zone is moderately deep. The shrink-swell potential is moderate. Soft shale bedrock is at a depth of 20 to 40 inches.

Included with this Shrouts soil in mapping are small areas of Beasley, Cynthiana, Faywood, and Garlin soils. Also included are a few small areas of a severely eroded Shrouts soil that have a silty clay surface layer. Included soils make up about 15 to 20 percent of this map unit.

Most areas of this Shrouts soil are used for hay and pasture. A few areas are used for cultivated crops or woodland.

This soil is suited to most of the commonly grown row crops and small grains. The slope and the depth to bedrock are limitations. The hazard of erosion is severe if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Tilth can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to most of the hay and pasture plants commonly grown in the survey area. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is suited to woodland, but few areas are used for timber production. The common trees are Virginia pine, black oak, and eastern redcedar. The species preferred for planting include Virginia pine, white oak, and eastern redcedar. The erosion hazard, equipment limitation, seedling mortality, and plant competition are management concerns. Steep skid

trails and roads are subject to gullying unless protected by water bars or plant cover, or both. The high content of clay can limit the use of some types of equipment. Reforestation may require careful management to ensure the survival of seedlings and to reduce competition from undesirable understory plants.

This soil is poorly suited to most urban uses. The depth to bedrock, the slow permeability, a high content of clay, and the moderate shrink-swell potential are limitations affecting most sanitary facilities and building site developments. Low soil strength is a limitation on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 4e.

SfD3—Shrouts-Cynthiana complex, 12 to 25 percent slopes, severely eroded, rocky

These moderately deep and shallow, well drained, moderately steep soils are on side slopes in the uplands, mainly in the Outer Bluegrass region of the survey area. The two soils are on similar landscapes. Erosion has removed more than 75 percent of the original surface layer. Rock outcrops cover about 1 to 2 percent of the surface. The Shrouts and Cynthiana soils are in areas so closely intermingled that they could not be separated at the scale used in mapping. Individual areas range from about 5 to 200 acres in size. Shrouts and similar soils make up about 55 percent of this complex, and Cynthiana and similar soils make up about 30 percent.

Typically, the surface layer of this Shrouts soil is dark yellowish brown silty clay about 4 inches thick. The subsoil extends to a depth of about 26 inches and is yellowish brown and olive brown mottled silty clay and clay. Below this is soft shale bedrock.

Permeability of the Shrouts soil is slow. The available water capacity is moderate or low. Runoff is high. This soil is somewhat difficult to till because of the clay content of the surface layer. The organic matter content of the surface layer is low. The root zone is moderately deep. The shrink-swell potential is moderate. The depth to soft bedrock is 20 to 40 inches.

Typically, the surface layer of this Cynthiana soil is brown silty clay loam about 4 inches thick. The subsoil extends to a depth of about 16 inches and is dark yellowish brown clay. Below this is limestone bedrock.

Permeability of the Cynthiana soil is moderately slow. The available water capacity is low. Runoff is high. The organic matter content of the surface layer is moderate. The root zone is shallow. The shrink-swell potential is moderate. The depth to hard bedrock is 10 to 20 inches.

Included with this unit in mapping are small areas of Beasley, Garlin, and Faywood soils and a few areas of Shrouts and Cynthiana soils that are not severely eroded. Included soils make up 15 to 20 percent of this map unit.

Most areas of this map unit are used for pasture. A few areas are used for hay and woodland. Some areas are idle and returning to brush. The soils are unsuited to cultivated crops or hay. The slope, depth to bedrock, low available water capacity, and rock outcrops are the main limitations.

These Shrouts and Cynthiana soils are suited to most pasture and hay plants commonly grown in the survey area. The slope and rock outcrops may limit the use of equipment. The depth to bedrock in the Cynthiana soil is a limitation. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

These soils are suited to woodland, but few areas are used for timber production. The common trees are Virginia pine, eastern redcedar, and black locust. The species preferred for planting include Virginia pine, white oak, and eastern redcedar. The hazard of erosion, the equipment limitation, seedling mortality, and plant competition are management concerns. Steep skid trails and roads are subject to washing and gullying unless protected by water bars, plant cover, or both. The high content of clay and rock outcrops can limit the use of some equipment. Reforestation may require careful management to ensure the survival of seedlings and to reduce competition from undesirable understory plants.

These soils are poorly suited to most urban uses. The depth to bedrock, the slow permeability, the slope, a high content of clay, and the shrink-swell potential are limitations affecting most sanitary facilities and building site developments. Low soil strength, the depth to bedrock, and the slope are limitations on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

These soils are in capability subclass 6s.

SgF3—Shrouts-Garlin-Cynthiana complex, 25 to 50 percent slopes, severely eroded, very rocky

These moderately deep and shallow, well drained soils are on steep side slopes, mainly in the Outer

Bluegrass region of the survey area. Erosion has removed more than 75 percent of the original surface layer. Limestone ledges and scattered areas of exposed marl and limestone bedrock outcrop cover about 5 to 10 percent of the surface. The Shrouts, Garlin, and Cynthiana soils are in areas so closely intermingled that they could not be separated at the scale used in mapping. Individual areas range from about 5 to 150 acres in size. Shrouts and similar soils make up about 40 percent of this complex, Garlin and similar soils make up about 25 percent, and Cynthiana and similar soils make up about 20 percent.

Typically, the surface layer of this Shrouts soil is dark yellowish brown silty clay about 4 inches thick. The subsoil extends to a depth of about 26 inches and is yellowish brown and olive brown mottled silty clay and clay with brown mottles. Below this is soft shale bedrock.

Permeability of the Shrouts soil is slow. The available water capacity is moderate. Runoff is very high. The organic matter content of the surface layer is low. The root zone is moderately deep. The shrink-swell potential is moderate. The depth to soft bedrock is 20 to 40 inches.

Typically, the surface layer of this Garlin soil is very dark grayish brown loam about 6 inches thick. The subsoil extends to a depth of about 18 inches and is light olive brown mottled loam. Below this is weathered calcareous siltstone and shale.

Permeability of the Garlin soil is moderate. The available water capacity is low or moderate. Runoff is very high. The organic matter content of the surface layer is moderate. The root zone is shallow. The depth to soft bedrock is 12 to 20 inches.

Typically, the surface layer of this Cynthiana soil is brown silty clay loam about 4 inches thick. The subsoil extends to a depth of about 16 inches and is dark yellowish brown clay. Below this is limestone bedrock.

Permeability of the Cynthiana soil is moderately slow. The available water capacity is very low. Runoff is very high. The organic matter content of the surface layer is moderate. The root zone is shallow. The shrink-swell potential is moderate. The depth to hard bedrock is 10 to 20 inches.

Included with these soils in mapping are small areas of Faywood, Beasley, and Lowell soils. Included soils make up about 10 percent of this map unit.

Most of the acreage of this map unit is used for pasture and woodland. Some areas are idle and returning to brush.

The Shrouts, Garlin, and Cynthiana soils generally are not suited to cultivated crops because of the slope, depth to bedrock, and rock outcrops. They are poorly suited to hay and pasture because of the slope and the depth to bedrock.

These soils are suited to woodland. The common trees are eastern redcedar, Virginia pine, hackberry, and black locust. The species preferred for planting include Virginia pine, white oak, and eastern redcedar. The erosion hazard, the equipment limitation, seedling mortality, and plant competition are management concerns. Steep skid trails and roads are subject to washing and gullying unless protected by water bars, plant cover, or both. The slope, a high content of clay, and rock outcrops can limit the use of some equipment. Reforestation may require careful management to ensure the survival of seedlings and to reduce competition from undesirable understory plants.

These soils are unsuited to most urban uses because of the depth to bedrock, the slow permeability, the slope, a hazard of slippage, a high content of clay, the shrink-swell potential, and low soil strength. Some limitations can be overcome by proper engineering designs and techniques.

These soils are in capability subclass 7s.

Sk—Skidmore very gravelly silt loam, frequently flooded

This very deep, well drained, nearly level soil is on flood plains, mainly in the Knobs and Pennyroyal regions of the survey area. Slopes range from 0 to 2 percent. Individual mapped areas range from about 3 to 50 acres in size.

Typically, the surface layer of this soil is brown very gravelly silt loam. The subsoil extends to a depth of about 32 inches and is brown and dark yellowish brown very gravelly loam. The substratum is dark yellowish brown very gravelly loam to a depth of about 65 inches.

Permeability is moderately rapid. The available water capacity is low. Runoff is negligible. This soil is somewhat difficult to till because of the gravel content. The organic matter content of the surface layer is low or moderate. The root zone is deep. A seasonal high water table is at a depth of 3 to 4 feet in winter and spring. The depth to bedrock is 40 to more than 100 inches. This soil is frequently flooded for brief periods during the winter and early spring.

Included with this soil in mapping are small areas of Carpenter, Nolin, and Yosemite soils. Also included are small areas that have less than 15 percent gravel in the surface layer and areas adjacent to streambanks that have slopes of 2 to 12 percent. Included soils make up about 10 to 15 percent of this map unit.

Most of the acreage of this Skidmore soil is used for cultivated crops, hay, or pasture. A few areas are used as woodland.

This soil is suited to most of the commonly grown crops. The high content of rock fragments in the plow layer restricts tillage. Flooding can damage small grains and other crops planted early in spring. Tilth can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to all of the hay and pasture plants commonly grown in the survey area. Flooding may damage some hay crops. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is well suited to woodland, but only a few areas are used for timber production. The common trees are sweetgum, yellow-poplar, and American sycamore. The species preferred for planting include yellow-poplar, white ash, and eastern white pine. Seedling mortality and plant competition are management concerns. Reforestation may require careful management to ensure the survival of seedlings and to reduce competition from undesirable understory plants.

This soil is poorly suited to most urban uses because of the flooding, the wetness, and the content of small stones. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 2w.

TeB—Teddy silt loam, 2 to 6 percent slopes

This very deep, moderately well drained, gently sloping soil is on broad ridgetops in the uplands, mainly in the Pennyroyal region of the survey area. Individual areas range from about 5 to 150 acres in size.

Typically, the surface layer of this soil is brown silt loam about 7 inches thick. The subsoil extends to a depth of about 65 inches. The upper part of the subsoil is pale brown loam and yellowish brown silt loam. The middle part is a firm, compact fragipan of yellowish brown silt loam with gray mottles. The lower part is yellowish red clay loam with gray mottles.

Permeability is moderate above the fragipan and slow or very slow in the fragipan. The available water capacity is moderate. The organic matter content of the surface layer is low or moderate. The root zone is moderately deep to the fragipan. The soil can be easily tilled. Runoff is low. A perched water table is at a depth of 1.5 to 3.0 feet. The depth to bedrock is 60 inches or more.

Included with this soil in mapping are small areas of Christian, Frankstown, Johnsburg, Lawrence, and Pricetown soils. Also included are a few small areas with slopes of more than 6 percent. Included soils make up about 10 to 15 percent of the map unit.

Most areas of this Teddy soil are used for cultivated crops, hay, or pasture. A few areas are used as woodland.

This soil is well suited to all of the commonly grown row crops and small grains. Because of the wetness, tillage may be delayed in the spring. In some places diversions help to control runoff and overwash from the adjacent hills. The hazard of erosion is moderate if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Tilth can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to most of the hay and pasture plants commonly grown in the survey area. Alfalfa may be short lived on this soil because of the wetness. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is suited to woodland, but only a few areas are used for timber production. The common trees are yellow-poplar, black oak, and sugar maple. The species preferred for planting include eastern white pine, shortleaf pine, white oak, and yellow-poplar. Plant competition is a management concern. Reforestation can be severely limited because of competition from undesirable understory plants.

This soil is suited to some urban uses. The wetness and the very slow permeability are limitations on sites for sanitary facilities. The wetness is a limitation affecting building site developments. Low soil strength is a limitation on sites for local roads and streets.

This soil is in capability subclass 2e.

TlB—Tilsit silt loam, 2 to 6 percent slopes

This deep, moderately well drained soil is on nearly level ridgetops in the uplands, mainly in the Knobs

region of the survey area. Individual areas range from about 5 to 55 acres in size.

Typically, the surface layer of this soil is brown silt loam about 6 inches thick. The subsoil extends to a depth of about 42 inches. The upper part of the subsoil is yellowish brown silty clay loam. The middle part is a firm compact fragipan of yellowish brown silty clay loam with gray mottles. The lower part is yellowish brown silty clay loam with gray mottles. Below this is weathered black shale.

Permeability is moderate above the fragipan and very slow in the fragipan. The available water capacity is moderate. The soil is easily tilled. The root zone is moderately deep to the fragipan. The organic matter content of the surface layer is low or moderate. A perched water table is at a depth of 1.5 to 2.5 feet. Runoff is low. The depth to bedrock is 40 inches or more.

Included with this soil in mapping are small areas of Berea, Greenbriar, Jessietown, Johnsburg, and Trappist soils. Also included is a soil that is similar to the Tilsit soil but is less than 40 inches deep to bedrock. Included soils make up about 5 to 10 percent of the map unit.

Most areas of this Tilsit soil are used for cultivated crops, hay, and pasture. A few areas are used for woodland.

This soil is well suited to all of the commonly grown row crops and small grains. Because of the wetness, tillage may be delayed in the spring. The hazard of erosion is moderate if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Tilth can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to most of the hay and pasture plants commonly grown in the survey area (fig. 20). Alfalfa may be short lived on this soil because of wetness. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This Tilsit soil is suited to woodland, but only a few areas are used for timber production. The common trees are shortleaf pine, white oak, and yellow-poplar. The species preferred for planting include eastern white pine, shortleaf pine, white oak, and yellow-poplar. Plant competition is a management concern. Reforestation may require careful management to reduce competition from undesirable plants.

This soil is suited to some urban uses. The wetness, very slow permeability, and depth to bedrock are limitations affecting most sanitary facilities. The wetness is a limitation affecting building site developments. Low soil strength is a limitation on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 2e.

TlC—Tilsit silt loam, 6 to 12 percent slopes

This deep, moderately well drained soil is on sloping ridgetops in the uplands, mainly in the Knobs region of the survey area. Individual areas range from about 5 to 55 acres in size.

Typically, the surface layer of this soil is brown silt loam about 6 inches thick. The subsoil extends to a depth of about 42 inches. The upper part of the subsoil is yellowish brown silty clay loam. The middle part is a firm compact fragipan of yellowish brown silty clay loam with gray mottles. The lower part is yellowish brown silty clay loam with gray mottles. Below this is weathered black shale.

Permeability is moderate above the fragipan and very slow in the fragipan. The available water capacity is moderate. The soil is easily tilled. The root zone is moderately deep to the fragipan. The organic matter content of the surface layer is low or moderate. A seasonal high water table is at a depth of 1.5 to 2.5 feet. Runoff is medium. The depth to bedrock is 40 inches or more.

Included with this soil in mapping are small areas of Greenbriar, Trappist, and Jessietown soils. Also included is a soil similar to the Tilsit soil but less than 40 inches deep to bedrock. Included soils make up about 10 to 15 percent of the map unit.

Most areas of this Tilsit soil are used for row crops, hay, and pasture. A few areas are used for woodland.

This soil is suited to all of the commonly grown row crops and small grains. Because of the wetness, tillage may be delayed in the spring. The hazard of erosion is severe if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Tilth can be maintained and improved by returning crop residue to the soil, growing green

Figure 20.—Hayland in an area of Tilsit silt loam, 2 to 6 percent slopes, and Trappist silty clay loam, 6 to 12 percent slopes, eroded.

manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to most of the hay and pasture plants commonly grown in the survey area. Alfalfa may be short lived on this soil due to wetness. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is suited to woodland, but only a few areas are used for timber production. The common trees are shortleaf pine, white oak, and yellow-poplar. The species preferred for planting include eastern white pine, shortleaf pine, white oak, and yellow-poplar. Plant competition is a management concern. Reforestation may require careful management to reduce competition from undesirable plants.

This soil is suited to some urban uses. The wetness, the slope, the very slow permeability, and the depth to bedrock are limitations affecting most sanitary facilities. The wetness and the slope are limitations affecting building site developments. Low soil strength is a limitation on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 3e.

TpB—Trappist silt loam, 2 to 6 percent slopes

This moderately deep, well drained, gently sloping soil is on ridgetops in the uplands, mainly in the Knobs region of the survey area. Individual areas range from about 3 to 35 acres in size.

Typically, the surface layer of this soil is brown silt loam about 6 inches thick. The subsoil extends to a depth of about 26 inches. It is brown silty clay loam in the upper part and strong brown silty clay in the lower part. The substratum extends to a depth of about 34 inches. It is variegated reddish brown, yellowish red, and gray very channery silty clay. Below this is about 4

inches of weathered shale. Below that is hard, fissile, black shale.

Permeability is slow. The available water capacity is moderate. This soil is easily tilled. The organic matter content of the surface layer is low or moderate. The root zone is moderately deep. Runoff is low. The shrink-swell potential is moderate. The depth to bedrock is 20 to 40 inches.

Included with this soil in mapping are small areas of Jessietown, Colyer, and Greenbriar soils. Also included are areas of moderately eroded Trappist soils that have a surface layer of silty clay loam. Included soils make up about 10 to 15 percent of this map unit.

Most areas of this Trappist soil are used for cultivated crops, hay, and pasture. A few areas are used for woodland.

This soil is well suited to all of the commonly grown row crops and small grains. The hazard of erosion is moderate if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Tilth can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to all of the hay and pasture plants commonly grown in the survey area. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is suited to woodland, but only a few areas are used for timber production. The common trees are Virginia pine, white oak, and red maple. The species preferred for planting include Virginia pine, white oak, and northern red oak. The equipment limitation and plant competition are management concerns. Reforestation may require careful management to ensure the survival of seedlings and to reduce competition from undesirable understory plants.

This soil is suited to some urban uses. The depth to bedrock, slow permeability, and a high content of clay are major limitations affecting most sanitary facilities. The depth to bedrock and the moderate shrink-swell potential are limitations affecting most building site developments. Low soil strength is a limitation on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 2e.

TpC2—Trappist silty clay loam, 6 to 12 percent slopes, eroded

This moderately deep, well drained, sloping soil is on ridgetops and side slopes in the uplands, mainly in the Knobs region of the survey area. Erosion has removed about 25 to 75 percent of the original surface layer. Individual areas range from about 3 to 35 acres in size.

Typically, the surface layer of this soil is brown silty clay loam about 7 inches thick. The subsoil extends to a depth of about 26 inches. It is strong brown and brown silty clay in the upper part and brown channery silty clay in the lower part. The substratum extends to a depth of about 35 inches. It is variegated brown, yellowish red, and pale brown very channery silty clay. Below this is hard, fissile, black shale.

Permeability is slow. The available water capacity is moderate. This soil is somewhat difficult to till. The organic matter content of the surface layer is low or moderate. The root zone is moderately deep. Runoff is medium. The shrink-swell potential is moderate. The depth to hard bedrock is 20 to 40 inches.

Included with this soil in mapping are small areas of Jessietown, Colyer, and Greenbriar soils. Also included are a few small areas of severely eroded Trappist soils that have a surface layer of silty clay. Included soils make up about 15 percent of this map unit.

Most areas of this Trappist soil are used for cultivated crops, hay, and pasture. A few areas are used for woodland.

This soil is well suited to all of the commonly grown row crops and small grains. The hazard of erosion is severe if a conventional tillage system is used. A combination of cropping systems and erosion-control practices is needed to slow runoff and control soil loss. Contour farming, cross-slope farming, stripcropping, and conservation tillage help to minimize erosion, conserve soil moisture, and improve water quality. Tilth can be maintained or improved by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping sequence.

This soil is well suited to all of the hay and pasture plants commonly grown in the survey area. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is suited to woodland, but only a few areas are used for timber production. The common trees are Virginia pine, white oak, and red maple. The species

preferred for planting include Virginia pine, white oak, and northern red oak. The equipment limitation and plant competition are management concerns. Reforestation may require careful management to ensure the survival of seedlings and to reduce competition from undesirable understory plants.

This soil is suited to some urban uses. The depth to bedrock, high clay content, slow permeability, and slope are limitations affecting most sanitary facilities. The depth to bedrock, slope, and moderate shrink-swell potential are limitations affecting most building site developments. Low soil strength is a limitation on sites for local roads and streets. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 3e.

TrD2—Trappist-Colyer complex, 12 to 25 percent slopes, eroded

These shallow and moderately deep, well drained, moderately steep soils are on side slopes and narrow ridgetops in the uplands, mainly in the Knobs region of the survey area. Erosion has removed about 25 to 75 percent of the original surface layer. The Trappist soil is on the lower part of concave side slopes, and the Colyer soil is on ridgetops and convex side slopes. The Trappist and Colyer soils are in areas so closely intermingled that they could not be separated at the scale used in mapping. Individual areas range from about 3 to 35 acres in size. Trappist and similar soils make up about 50 percent of the map unit, and Colyer and similar soils make up about 35 percent.

Typically, the surface layer of this Trappist soil is brown silty clay loam about 7 inches thick. The subsoil extends to a depth of about 26 inches. It is strong brown and brown silty clay in the upper part and brown channery silty clay in the lower part. The substratum extends to a depth of about 35 inches. It is variegated brown, yellowish red, and pale brown very channery silty clay. Below this is hard black shale bedrock.

Permeability of the Trappist soil is slow. The available water capacity is moderate. This soil is somewhat difficult to till. The organic matter content of the surface layer is low or moderate. The root zone is moderately deep. Runoff is high. The shrink-swell potential is moderate. The depth to hard bedrock is 20 to 40 inches.

Typically, the surface layer of this Colyer soil is dark grayish brown silty clay loam about 9 inches thick. The subsoil extends to a depth of about 14 inches and is yellowish brown very channery silty clay. Below this is hard black shale bedrock.

Permeability of the Colyer soil is slow. The available water capacity is very low. The root zone is shallow. The organic matter content of the surface layer is low. Runoff is high. The depth to hard bedrock is 8 to 20 inches.

Included with this complex in mapping are small areas of Carpenter, Jessietown, and Lenberg soils. Also included are small areas of severely eroded Trappist soils that have a silty clay surface layer and areas that have more than 2 percent rock outcrops. Included soils and other areas make up about 10 to 25 percent of this map unit.

Most areas of this complex are used for pasture, and a few areas are used for woodland. Some areas are covered with brush and are idle.

The Trappist and Colyer soils are unsuited to cultivated crops and poorly suited to hay because of the slope, low available water capacity, and depth to bedrock.

These soils are suited to most of the pasture plants commonly grown in the survey area. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

These soils are suited to woodland. The common trees are Virginia pine, chestnut oak, and scarlet oak. The species preferred for planting on the Trappist soil include Virginia pine and white oak. The species preferred for planting on the Colyer soil include Virginia pine and shortleaf pine. The hazard of erosion, the equipment limitation, and plant competition are management concerns in areas of both soils. Seedling mortality is a management concern in areas of the Colyer soil. Steep skid trails and roads are subject to gullying unless protected by water bars or plant cover, or both. The slope limits the use of some equipment. Reforestation may require careful management to ensure the survival of seedlings and to reduce competition from undesirable understory plants.

These soils are poorly suited to most urban uses because of the slope, depth to bedrock, low soil strength, slow permeability, and a high content of clay. Some limitations can be overcome by proper engineering designs and techniques.

These soils are in capability subclass 6s.

W—Water

This map unit consists of areas inundated with water for all of the year and generally includes rivers, lakes, and ponds.

No capability class is assigned to this map unit.

Yo—Yosemite gravelly silt loam, frequently flooded

This very deep, somewhat poorly drained, nearly level soil is on flood plains, mainly in the Pennyroyal region of the survey area. Slopes range from 0 to 2 percent. Individual areas range from about 3 to 170 acres in size.

Typically, the surface layer of this soil is brown gravelly silt loam. The subsoil extends to a depth of about 21 inches. It is yellowish brown very gravelly silt loam with gray mottles. The substratum is light brownish gray extremely gravelly loam with brown mottles.

Permeability is moderately rapid. The available water capacity is low or moderate. This soil is somewhat difficult to till because of the content of gravel. The root zone is very deep. The content of organic matter in the surface layer is low or moderate. Runoff is negligible. The seasonal high water table is at a depth of 1.0 to 1.5 feet. The depth to bedrock is more than 60 inches. The soil is frequently flooded for brief periods during winter and spring.

Included with this soil in mapping are small areas of Carpenter, Melvin, Newark, Nolin, and Skidmore soils. Also included are a few small areas that are poorly drained or moderately well drained. Included soils and other areas make up about 15 percent of this map unit.

Most areas of this Yosemite soil are used for cultivated crops, hay, and pasture. A few areas are used as woodland.

Where this soil has been drained, it is suited to cultivated crops. Flooding and wetness can damage small grains and corn in the winter and spring. Because of the wetness, farming may be delayed in undrained areas. Tile drains and open ditches may improve internal drainage. In some places diversions can help to control surface runoff and overwash from the adjacent soils. Artificial drainage systems help to lengthen the effective growing season, reduce the length of time that farming is delayed, and increase the range of suitable plants. Tilth can be improved and organic matter maintained by returning crop residue to the soil, growing green manure crops and cover crops, using no-till planting, and including grasses and legumes in the cropping system.

This soil is suited to pasture plants that can withstand wetness and flooding for short periods. If drained, it is suited to a wide range of pasture plants. Restricting use during wet periods, proper stocking rates, and rotational grazing help to maintain the stand of grasses and soil tilth. Frequent pasture renovation helps to maintain the desired plants.

This soil is suited to woodland, but only a few areas are used for timber production. The common trees are sweetgum, pin oak, and yellow-poplar. The species preferred for planting include American sycamore, sweetgum, and green ash. The equipment limitation, seeding mortality, and plant competition are management concerns. The use of some equipment may be limited by the wetness. Reforestation may require careful management to ensure the survival of seedlings and to reduce competition from undesirable understory plants.

This soil is poorly suited to most urban uses because of the flooding and wetness. Some limitations can be overcome by proper engineering designs and techniques.

This soil is in capability subclass 2w.

Prime Farmland

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil qualities, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. It is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. The slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

About 25 percent of the total acreage in Garrard and Lincoln Counties, or about 91,000 acres, is prime farmland or has the potential to be prime farmland. Much of this prime farmland is used for crops, mainly burley tobacco, corn, and alfalfa. These areas are scattered throughout the survey area, but most are in general soil map units 2, 5, 7, and 13. See the section "General Soil Map Units" for more information.

A recent trend in land use in some parts of the survey area has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible and less productive than prime farmland.

The map units in the survey area that are considered prime farmland are listed at the end of this section. This list does not constitute a recommendation for a particular land use. On some soils included in the list, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures. The extent of each listed map unit is shown in table 4. The location is shown on the detailed soil maps. The soil qualities that affect use and management are described under the heading "Detailed Soil Map Units."

The map units that meet the requirements for prime farmland are:

AlB	Allegheny loam, 2 to 6 percent slopes, rarely flooded
BaB	Beasley silt loam, 2 to 6 percent slopes
BeB	Berea silt loam, 2 to 6 percent slopes
Bo	Boonesboro silt loam, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
CeB	Carpenter gravelly silt loam, 2 to 6 percent slopes
ChB	Chenault gravelly silt loam, 2 to 6 percent slopes
CmB	Christian silt loam, 2 to 6 percent slopes
CrB	Crider silt loam, 2 to 6 percent slopes
CuB	Culleoka silt loam, 2 to 6 percent slopes
DoB	Donerail silt loam, 2 to 6 percent slopes
EkB	Elk silt loam, 2 to 6 percent slopes
EmB	Elk silt loam, 2 to 6 percent slopes, rarely flooded
FrB	Frankstown gravelly silt loam, 2 to 6 percent slopes
GnB	Gilpin silt loam, 2 to 6 percent slopes
GrB	Greenbriar silt loam, 2 to 6 percent slopes
JeB	Jessietown silt loam, 2 to 6 percent slopes
Jm	Johnsburg-Mullins complex (where drained)
Jr	Johnsburg-Robertsville complex (where drained)

La	Lawrence silt loam, terrace, rarely flooded (where drained)
Le	Lawrence-Robertsville complex (where drained)
LlB	Lily loam, 2 to 6 percent slopes
LoB	Lowell silt loam, 2 to 6 percent slopes
LsB	Lowell silt loam, phosphatic, 2 to 6 percent slopes
Me	Melvin silt loam, frequently flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
MoB	Monongahela loam, 2 to 6 percent slopes
Ne	Newark silt loam, frequently flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
NhB	Nicholson silt loam, 2 to 6 percent slopes
No	Nolin silt loam, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
OtB	Otwell silt loam, 2 to 6 percent slopes
OwB	Otwell silt loam, 2 to 6 percent slopes, rarely flooded
PrB	Pricetown silt loam, 2 to 6 percent slopes
Rb	Robertsville silt loam, terrace, rarely flooded (where drained)
SaB	Sandview silt loam, 2 to 6 percent slopes
SdB	Sandview silt loam, phosphatic, 2 to 6 percent slopes
TeB	Teddy silt loam, 2 to 6 percent slopes
TlB	Tilsit silt loam, 2 to 6 percent slopes
TpB	Trappist silt loam, 2 to 6 percent slopes

Hydric Soils

In this section, hydric soils are defined and described and the hydric soils in the survey area are listed.

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology *(13, 15, 31, 37)*. Criteria for each of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part *(18)*. These soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established *(19)*. These criteria are used to identify a phase of a soil series that normally is associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" and "Keys to Soil Taxonomy" *(45, 49)* and in the "Soil Survey Manual" *(48)*.

If soils are wet enough for a long enough period to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils in this survey area are specified in "Field Indicators of Hydric Soils in the United States" *(20)*.

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

The following map units meet the definition of hydric soils and, in addition, have at least one of the hydric soil indicators. Some of these map units are complexes of a hydric soil and a nonhydric soil. The Lawrence-Robertsville complex is an example. The Robertsville soil is a hydric soil, and the Lawrence soil is not hydric. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site *(20, 31)*.

Jm	Johnsburg-Mullins complex
Jr	Johnsburg-Robertsville complex
Le	Lawrence-Robertsville complex
Me	Melvin silt loam, frequently flooded
Rb	Robertsville silt loam, terrace, rarely flooded

Map units that are made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

The following map units, in general, do not meet the definition of hydric soils because they do not have one of the hydric soil indicators. A portion of these map units, however, may include hydric soils. Onsite investigation is recommended to determine whether hydric soils occur and the location of the included hydric soils.

La	Lawrence silt loam, terrace, rarely flooded
Ne	Newark silt loam, frequently flooded
Yo	Yosemite gravelly silt loam, frequently flooded

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as forestland; as sites for buildings, sanitary facilities, highways, and other transportation systems, and parks and other recreational facilities; for agricultural waste management; and as wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Crops and Pasture

Gerald A. Richardson, Soil Scientist, Kentucky Natural Resources and Environmental Protection Cabinet, helped prepare this section.

General management needed for crops and pasture is suggested in this section. The estimated yields of the main crops and pasture plants are listed and the system of land capability classification used by the Natural Resources Conservation Service is explained.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under the heading "Detailed Soil Map Units." Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

In 1992, approximately 92,000 acres in Garrard and Lincoln Counties was used for cropland and about 174,000 acres was used for pasture *(52)*. The principle crops are corn, soybeans, wheat, burley tobacco, and grass-legume hay.

The soils in Garrard and Lincoln Counties have good potential for production of crops. About 24 percent of the soils, or 91,000 acres in the survey area, is considered prime farmland or potential prime farmland. Much of this land is used for pasture and could easily be converted to cropland. In addition to the reserve production capacity represented by this land, crop production could also be increased by applying the latest production techniques to all of the cropland in the survey area. This soil survey can facilitate the application of this technology.

Crops

Soil erosion is a major concern in the management of most soils used for cropland and pasture in the survey area. If slopes are greater than 2 percent, erosion is a hazard. Christian, Crider, Lowell, Pricetown, and Sandview soils have slopes of more than 2 percent. Most of the row crops are grown on the gently sloping and sloping ridgetops and side

slopes. Hay and pasture plants are grown primarily on the sloping to moderately steep side slopes. All of the soils in these areas have slopes of more than 2 percent. Some of the row crops are grown on the nearly level flood plains and stream terraces where erosion is not a problem.

Erosion of the soil surface layer is damaging. Productivity is reduced as the surface layer is lost and part of the subsoil is incorporated into the plow layer. Loss of the surface layer is especially damaging on soils that have a clayey subsoil, such as Christian and Lowell soils. Erosion also further limits the depth of the root zone in soils that have a limiting layer in the subsoil or are moderately deep over bedrock. Nicholson, Teddy, and Tilsit soils have a root restricting fragipan, and Faywood and Trappist soils are moderately deep over bedrock. Erosion control minimizes the pollution of streams and lakes by sediment and improves the quality of water for domestic use, for recreational use, and for use by livestock, fish, and wildlife.

In many sloping fields, preparing a good seedbed is difficult because much of the original friable surface layer has been eroded away, leaving a silty clay loam surface texture. Such areas are common in areas of Beasley and Trappist soils.

Erosion-control practices provide protective surface cover, reduce runoff, and increase infiltration. A cropping system that keeps vegetative cover on the soil for extended periods generally can keep soil erosion to amounts that will not reduce the productive capacity of the soil. On farms used for pasture and hay, including legume and grass forage crops in the cropping system helps to control erosion on sloping land. It also provides nitrogen and improves tilth.

Common erosion-control measures in Garrard and Lincoln Counties are applying conservation tillage (including no-till planting), rotating crops frequently, growing cover crops, and managing crop residue. Other more extensive measures, such as diversions, terraces, and grassed waterways, are used in some areas.

Minimizing tillage, no-till planting, and leaving crop residue on the soil surface increase infiltration and reduce the hazards of runoff and erosion. The use of conservation tillage systems is increasing in the survey area. No-till planting and double-cropping are effective in reducing erosion on sloping land. These practices are being adapted to most of the soils in the survey area.

Farming on the contour, contour stripcropping, and cross-slope farming also can help to control erosion. They are best suited to soils that have smooth uniform slopes, including most areas of Christian, Crider, Sandview, and Pricetown soils.

Information on the design and application of erosion-control measures for the soils in the survey area is available at the local office of the Natural Resources Conservation Service or the Soil and Water Conservation District.

The content of organic matter needs to be maintained to achieve optimum crop production and maintain soil quality. Organic matter is an important source of nitrogen for crops. It also increases the rate of water infiltration, prevents soil crusting, improves tilth, and provides a suitable environment for micro- and macro-organisms. The content of organic matter can be maintained or increased by using no-till planting, adding manure, managing crop residue, planting green manure crops and cover crops, and including grasses and legumes in the cropping system.

Soil drainage is a concern on some of the soils in the survey area that are used for crops and pasture. Some of the soils are so wet that the production of crops common to the area is generally difficult unless they are artificially drained. Melvin and Robertsville soils are examples of soils with poor internal drainage. The somewhat poorly drained Newark and Lawrence soils have some yield reduction during most years due to wetness unless they are artificially drained. On the moderately well drained Nicholson, Teddy, and Tilsit soils, artificial drainage generally is not needed. Crops that can tolerate occasional wetness should be selected.

The design of both surface and subsurface drainage systems varies according to the kind of soil. Johnsburg and Lawrence soils have a fragipan that reduces the effectiveness of tile drainage systems. An open ditch drainage system or a combination of open ditch and tile drainage systems may be effective on these soils. Tile drainage systems have been used effectively on Newark and Yosemite soils.

Many soils on the uplands have low or medium soil fertility and are acid in their natural state. The soils on flood plains, such as Boonesboro, Nolin, Newark, and Skidmore, are richer in plant nutrients than most of the soils in the uplands and range in reaction from moderately acid to slightly alkaline. Frequent applications of ground limestone are needed to raise the pH level sufficiently for good growth of alfalfa and other crops that grow best on nearly neutral soils. Levels of available phosphorus and potash are naturally low in many soils in the survey area. Lowell and Faywood soils have a medium level of phosphate. Some soils in the Inner Bluegrass region of the survey area may have high levels of natural phosphorus

Figure 21.—Vegetables in an area of Lowell silt loam, 2 to 6 percent slopes.

(22, 39). On all soils, additions of lime and fertilizer should be based on the results of soil tests, on the needs of the crop, and on the desired level of yields. The Kentucky Cooperative Extension Service can determine the kind, amount, and proper method of application of fertilizer and lime.

Soil tilth is an important factor in seed germination and infiltration of water into the soil. Soils that have good tilth are granular and porous and have an adequate organic matter content. A gravelly surface layer reduces the tilth of some soils in the survey area. The content and size of gravel may hinder the use of some tillage implements. Frankstown, Skidmore, and Yosemite soils have a gravelly or very gravelly surface layer.

Some of the soils in the survey area that are used for crops have a surface layer of silt loam that is light in color and moderate or low in organic matter content. Generally, the structure of the surface layer is weak, and intense rainfall causes the formation of a crust on the soil surface. The crust is hard when dry and nearly impervious to water. Once the crust forms, it reduces infiltration and increases runoff. Regular additions of crop residue and manure and using no-till planting help to improve soil structure and prevent crust formation.

Corn, burley tobacco, and soybeans are the most common row crops. Other crops suited to the soils and climate of the survey area include many that are not commonly grown. Grain sorghum, sunflowers, and other similar crops can be grown if economic conditions are favorable. Wheat is the most common close-grown small grain. Rye, barley, and oats are grown mainly for cover crops but can be grown for grain. In addition, Canola and grass seed harvested from tall fescue and orchardgrass have a potential market in the survey area.

Specialty crops grown in Garrard and Lincoln Counties are vegetables, ornamental plants and trees, small fruits, and tree fruits. A small acreage is used for apples, strawberries, sweet corn, peppers, and other vegetables (fig. 21). Blueberries, grapes, nursery crops, and many vegetables have a potential market in the survey area.

Figure 22.—Hay in an area of Pricetown silt loam, 2 to 6 percent slopes.

Very deep to moderately deep soils that have good natural drainage and that warm up early in the spring are especially well suited to many vegetables and fruits. Some examples are Christian, Jessietown, Lowell, Nolin, Pricetown, and Sandview soils that have slopes of less than 6 percent. Crops can generally be planted and harvested earlier on these soils than on other soils in the survey area.

Most of the well drained soils in the county are suitable for orchards and nursery plants. Soils in low landscape positions, where frost is frequent and air drainage is poor, generally are poorly suited to early vegetables, small fruits, and orchards.

The latest information about growing specialty crops can be obtained from the local office of the Natural Resources Conservation Service or the Kentucky Cooperative Extension Service.

Pasture and Hay

In both Garrard and Lincoln Counties, livestock production is an important part of the farm economy. In 1997, it provided about 54 percent of the total farm income *(25)*. Most farms in the survey area produce some livestock. A successful livestock program is dependent on the production of large quantities of adequate quality forage. Such a program can furnish as much as 78 percent of the feed for beef cattle and 66 percent for dairy cattle *(16)*.

About 173,800 acres in the survey area is used for pasture, including pastured woodland *(40)*. A sizable acreage needs improvement practices such as brush control and protection from overgrazing.

Most of the hayland and pasture in the survey area supports a mixture of grasses and legumes. Much of the hay grown is in a rotation system. During harvesting, most of the hay is rolled into large circular bales (fig. 22).

The soils in the survey area vary widely in their suitability for hay and pasture because of differences in depth to bedrock or limiting layers, internal drainage, ability to supply moisture, and many other properties. Grasses and legumes vary widely in their ability to persist and produce on different soils. As a result, the selection of suitable species or plant mixtures is important.

The level to gently sloping, very deep and deep, well drained soils are best suited to the highest producing crops, such as corn silage, alfalfa, a mixture of alfalfa and orchardgrass, or a mixture of alfalfa and timothy. On the steeper soils, sod-forming grasses, such as tall fescue, orchardgrass, or bluegrass, are needed to minimize soil erosion. Alfalfa should be grown with a cool-season grass where the soils are at least 2 feet deep over bedrock and are well drained. On soils that are less than 2 feet deep over bedrock or that are not well drained, a mixture of clover and grasses or a pure stand of grass may be more suitable. Legumes can be established through renovation of sods that are dominantly grass.

The forage species selected for planting should be those that are suited not only to the soil but also to the intended use. They should be those that provide maximum quality and versatility in the forage program. Legumes generally produce higher quality feed than grasses. The taller legumes, such as alfalfa and red clover, are more versatile than legumes that are used mainly for grazing, such as white clover. Orchardgrass, timothy, and tall fescue are better suited to use as hay and silage.

Tall fescue is an important cool-season grass suited to a wide range of soil conditions. It is grown for both pasture and hay. The growth that occurs from August to November is commonly permitted to accumulate in the field and is stockpiled for deferred grazing in late fall and winter. Applications of nitrogen fertilizer are important for maximum production during this stockpiling period. The rates of application should be based on the desired level of production.

Warm-season grasses, which are planted during the period from early April to late May, can help alleviate the "summer slump" of cool-season grasses, such as tall fescue and Kentucky bluegrass. They grow well in warm weather, especially from mid-June to September, when the growth of the cool-season grasses slows. Warm-season grasses include switchgrass, big bluestem, indiangrass, and Caucasian bluestem.

Pasture renovation is needed to maintain or increase yields in areas used for hay and pasture. When an area is renovated, the sod is partially destroyed, lime and fertilizer are applied, and desirable forage plants are seeded *(17)*. Seeding legumes, which take in nitrogen from the air, provides high-quality feed and increases summer production.

Additional information about managing pasture and hay is available at the local office of the Natural Resources Conservation Service or the Kentucky Cooperative Extension Service.

Yields per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in tables 5 and 6. In any given year, yields may be higher or lower than those indicated in the tables because of variations in rainfall and other climatic factors. The land capability classification of map units in the survey area also is shown in the tables.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations also are considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in tables 5 and 6 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major

reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for forestland or for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit *(44)*. Only class and subclass are used in this survey.

Capability classes, the broadest groups, are designated by numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have slight limitations that restrict their use.

Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.

Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e*, *w*, or *s*, to the class numeral, for example, 2e. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); and *s* shows that the soil is limited mainly because it is shallow, droughty, or stony.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by *w* and *s* because the soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use to pasture, forestland, wildlife habitat, or recreation.

Woodland Management and Productivity

Garrard and Lincoln Counties are in the Western Mesophytic Forest region of Kentucky, an area in which white oak, red oak, and hickories are dominant *(28)*. Commercial forest makes up about 24 percent of the total acreage of Garrard County and about 30 percent of the total acreage of Lincoln County *(42)*. Most woodland in the survey area is generally in small private holdings that are essentially unmanaged. The average forest stand currently produces 33 cubic feet of wood per acre per year (2.3 cubic meters of wood per hectare per year) *(28)*. Most of the forest is capable of producing 50 cubic feet or more of wood per acre per year (3.5 cubic meters of wood per hectare per year).

About 30 percent of the landowners own woodland as part of a farm or tract. These stands are not well stocked with desirable, high-quality trees. Many stands are owned for short intervals, commonly less than 20 years.

Tree growth, stocking rates, and quality can be improved by removing low-quality trees and by regenerating desirable species after harvest. Soil surveys are useful for identifying the most productive soils, for identifying soil limitations in management, and in helping to select tree species on a site. A local forester should be contacted for recommendations for intensive management needs and marketing assistance.

The wood industry in the survey area consists of several commercial sawmills that produce rough lumber, dimension stock, and pallet parts. Sawdust and chips are sold to a charcoal plant in a neighboring county. Several mills in adjacent counties buy logs and standing trees from the survey area.

The local office of the Natural Resources Conservation Service and the Kentucky Division of Forestry can provide specific information about the management and productivity of soils for wood crops.

This soil survey can be used by woodland managers planning ways to increase the productivity of forestland. Some soils respond better to applications of fertilizer than others, and some are more susceptible to landslides and erosion after roads are built and timber is harvested. Some soils require special reforestation efforts. In the section "Detailed Soil Map Units," the description of each map unit in the survey area suitable for timber includes information about woodland productivity and management concerns in producing and harvesting timber.

Table 7 can be used by woodland owners or forest managers in planning the use of soils for wood crops.

In the table, *slight, moderate,* and *severe* indicate the degree of the major soil limitations to be considered in management.

Erosion hazard is the probability that damage will occur as a result of site preparation and cutting where the soil is exposed along roads, skid trails, and fire lanes and in log-handling areas. Forests that have been burned or overgrazed are also subject to erosion. Ratings of the erosion hazard are based on the percent of the slope. A rating of *slight* indicates that no particular prevention measures are needed under ordinary conditions. A rating of *moderate* indicates that erosion-control measures are needed in certain silvicultural activities. A rating of *severe* indicates that special precautions are needed to control erosion in most silvicultural activities.

Equipment limitation reflects the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. The chief characteristics and conditions considered in the ratings are slope, stones on the surface, rock outcrops, soil wetness, and texture of the surface layer. A rating of *slight* indicates that under normal conditions the kind of equipment and season of use are not significantly restricted by soil factors. Soil wetness can restrict equipment use, but the wet period does not exceed 1 month. A rating of *moderate* indicates that equipment use is moderately restricted because of one or more soil factors. If the soil is wet, the wetness restricts equipment use for a period of 1 to 3 months. A rating of *severe* indicates that equipment use is severely restricted either as to the kind of equipment that can be used or the season of use. If the soil is wet, the wetness restricts equipment use for more than 3 months.

Seedling mortality refers to the death of naturally occurring or planted tree seedlings, as influenced by the kinds of soil, soil wetness, or topographic conditions. The factors used in rating the soils for seedling mortality are texture of the surface layer, depth to a seasonal high water table and the length of the period when the water table is high, rock fragments in the surface layer, effective rooting depth, and slope aspect. A rating of *slight* indicates that seedling mortality is not likely to be a problem under normal conditions. Expected mortality is less than 25 percent. A rating of *moderate* indicates that some problems from seedling mortality can be expected. Extra precautions are advisable. Expected mortality is 25 to 50 percent. A rating of *severe* indicates that seedling mortality is a serious problem. Extra precautions are important. Replanting may be necessary. Expected mortality is more than 50 percent.

Plant competition ratings indicate the degree to which undesirable species are expected to invade and grow when openings are made in the tree canopy. The main factors that affect plant competition are depth to the water table and the available water capacity. A rating of *slight* indicates that competition from undesirable plants is not likely to prevent natural regeneration or suppress the more desirable species. Planted seedlings can become established without undue competition. A rating of *moderate* indicates that competition may delay the establishment of desirable species. Competition may hamper stand development, but it will not prevent the eventual development of fully stocked stands. A rating of *severe* indicates that competition can be expected to prevent regeneration unless precautionary measures are applied.

The *potential productivity* of merchantable or *common trees* on a soil is expressed as a *site index* and as a *volume* number. The site index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands *(3, 5, 7, 8, 9, 10, 12, 14, 32, 33, 35, 36, 41)*. Commonly grown trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

The *volume of wood fiber*, a number, is the yield likely to be produced by the most important trees. This number, expressed as cubic feet per acre per year, indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

Suggested trees to plant are those trees preferred for planting, seeding, or natural regeneration and residual trees in thinning or partial harvest operations.

Recreation

Many outdoor recreational activities are available in the survey area. The abundance of crop fields, pastures, water areas, and wooded areas provides habitat for a variety of plants, animals, and birds. The survey area contains good habitat for quail, mourning dove, rabbit, wild turkey, and deer. Hunting and fishing are very popular in the area. Several nature trails have been established in the nature preserves near the Kentucky Palisades (fig. 23) and at Maywoods, a nature area in the Knobs region managed by Eastern Kentucky University. Other outdoor activities include hiking, golfing, and picnicking.

The abundance of farm ponds, streams, and rivers provides a variety of opportunities for fishing and

Figure 23.—The Kentucky River and the Palisades. On the left, an area of Rock outcrop-Fairmount complex, 50 to 120 percent slopes, and, next to the river, an area of Elk silt loam, 2 to 6 percent slopes, rarely flooded.

swimming. Lake Herrington and the Kentucky River are widely used for boating and fishing.

The soils of the survey area are rated in table 8 according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In the table, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or a combination of these measures.

The information in the table can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 11 and interpretations for dwellings without basements and for local roads and streets in table 10.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have mild slopes and are not wet or subject to flooding during the period of

use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over bedrock or a hardpan should be considered.

Paths and trails for hiking and horseback riding should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and few or no stones or boulders on the surface.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface. The suitability of the soil for tees or greens is not considered in rating the soils.

Wildlife Habitat

Garrard and Lincoln Counties have a valuable commodity in their fish and wildlife resources. The major game species of wildlife in the survey area include white-tailed deer, gray squirrel, cottontail rabbit, raccoon, gray fox, red fox, and ruffed grouse. Bobwhite quail, turkey, and mourning dove are present but in limited numbers. Many species of non-game birds and mammals also inhabit the survey area. The survey area has approximately 36 species of mammals, 110 species of birds, 22 species of reptiles, 21 species of amphibians, 71 species of fish, and 16 species of mussels *(26)*. Although the types of habitat required by wildlife vary, deer and squirrels generally use woodland habitat; rabbits, quail, and doves use openland habitat; and ducks and geese use wetland habitat.

Waterfowl are commonly found in the survey area during their migration periods. Common species include mallards, teal, widgeon, and Canada geese. Wood ducks are the more permanent waterfowl residents in the survey area, nesting along the Dix, Green, and Kentucky Rivers.

The streams in the survey area contain a variety of warm-water game fish, panfish, and rough fish. Examples are the largemouth bass, bluegill, and carp. Many of the soils in Garrard and Lincoln Counties are suitable for impounding water. Ponds are stocked and managed for largemouth bass, channel catfish, and bluegill. Aquaculture in the survey area consists mainly of pay lakes and privately owned ponds. Expansion of aquaculture will depend on adequate water supply, improvement of water quality, and marketing.

Photographers, birdwatchers, and others are interested in the flora and fauna of the survey area. The rugged, wooded hills in Knobs region of the survey area are home to many species of plants and animals. The steep limestone bluffs of the Palisades along the Kentucky River not only provide many scenic views but also provide habitat for a wide variety of plants. The remaining wetlands scattered throughout the survey area also contain many interesting species of plants.

Successful management of wildlife on any tract of land requires that food, cover, and water be available in a suitable combination. Lack of any one of these necessities, an imbalance among them, or an inadequate distribution of them may limit or eliminate the population of the desired wildlife.

Soil interpretations for wildlife aid in selecting the more suitable sites for various kinds of management. They serve as indicators of the intensity of management needed to achieve satisfactory results. They also serve as a means of showing why it may not be generally feasible to manage a particular area for a given kind of wildlife. Interpretations also serve in broad-scale planning of wildlife management areas, parks, and nature areas.

The local office of the Natural Resources Conservation Service can provide specific information about the management and production of soils for wildlife habitat.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting the appropriate vegetation, by maintaining the existing

plant cover, or by promoting the natural establishment of desirable plants.

In table 9, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife *(72)*. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, and barley.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flooding, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, orchardgrass, bluegrass, clover, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are bluestem, goldenrod, beggarweed, indiangrass, and amaranth.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of these plants are oak, poplar, cherry, sweetgum, apple, hawthorn, dogwood, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are Russian-olive, autumn-olive, and crabapple.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are Virginia pine, white pine, and eastern redcedar.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, cattail, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. Wildlife attracted to these areas include bobwhite quail, meadowlark, field sparrow, cottontail rabbit, and red fox.

Habitat for woodland wildlife consists of areas of deciduous plants or coniferous plants, or both, and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, ruffed grouse, woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, deer, elk, and bear.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, herons, shore birds, muskrat, mink, otter, and beaver.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil Properties" section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 or 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

Table 10 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock or a very firm dense layer, stone content, soil texture, and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and depth to the water table.

Dwellings and *small commercial buildings* are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed

performance of the soils. A high water table, flooding, shrinking and swelling, and organic layers can cause the movement of footings. A high water table, depth to bedrock, large stones, slope, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 or 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or stabilized soil material; and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock, a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, frost action potential, and depth to a high water table affect the traffic-supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, depth to bedrock, and the available water capacity in the upper 40 inches affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

Sanitary Facilities

Table 11 shows the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

The table also shows the suitability of the soils for use as daily cover for landfill. A rating of *good* indicates that soil properties and site features are favorable for the use and good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, depth to bedrock, and flooding affect absorption of the effluent. Large stones and bedrock interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

The table gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, depth to bedrock, flooding, large stones, and content of organic matter.

Excessive seepage resulting from rapid permeability in the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope and bedrock can cause construction problems, and large stones can hinder compaction of the lagoon floor.

Sanitary landfills are areas where solid waste is

disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground-water pollution. Ease of excavation and revegetation should be considered.

The ratings in the table are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock, a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, highly organic layers, and soil reaction affect trench landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to wind erosion.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

Construction Materials

Table 12 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a *probable* or *improbable* source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help to determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, a low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have a moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet and have a water table at a depth of less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In the table, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of

grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable, loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel or stones, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel or stones, have slopes of more than 15 percent, or have a seasonal high water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Water Management

Table 13 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed excavated ponds. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives for each soil the restrictive features that affect drainage, irrigation, terraces and diversions, and grassed waterways.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders or organic matter. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to

bedrock or to other layers that affect the rate of water movement, permeability, depth to a high water table or depth of standing water if the soil is subject to ponding, slope, susceptibility to flooding, subsidence of organic layers, and the potential for frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as sulfur. Availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and maintenance of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock or to a cemented pan. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock affect the construction of grassed waterways. A hazard of erosion, low available water capacity, restricted rooting depth, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine particle-size distribution, plasticity, and compaction and other characteristics. These results are reported in tables 19 through 23.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas *(21, 22, 23, 24)*. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties are shown in the tables. They include engineering index properties, physical and chemical properties, and pertinent soil and water features.

Engineering Index Properties

Table 14 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under the heading "Soil Series and Their Morphology."

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as about 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system *(2)* and the system adopted by the American Association of State Highway and Transportation Officials *(1)*.

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Rock fragments 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard

Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

Physical Properties

Table 15 shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In table 15, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $^1/_3$- or $^1/_{10}$-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability (K_{sat}) refers to the ability of a soil to transmit water or air. The term "permeability," as used in soil surveys, indicates saturated hydraulic conductivity (K_{sat}). The estimates in the table indicate the rate of water movement, in inches per hour, when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at $^1/_3$- or $^1/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. Volume change is influenced by the amount and type of clay minerals in the soil.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and

swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 15, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in table 15 as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of several factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and permeability. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Chemical Properties

Table 16 shows estimates of some chemical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Cation-exchange capacity is the total amount of extractable bases that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation-exchange capacity. The ability to retain cations reduces the hazard of ground-water pollution.

Soil reaction is a measure of acidity or alkalinity. The pH of each soil horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Soil Features

Table 17 gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

A *restrictive layer* is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers. The table indicates the hardness and thickness of the restrictive layer, both of which significantly affect the ease of excavation. *Depth to top* is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion

of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel or concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel or concrete in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low, moderate,* or *high,* is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion also is expressed as *low, moderate,* or *high.* It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Water Features

Table 18 gives estimates of various water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

The *months* in the table indicate the portion of the year in which the feature is most likely to be a concern.

Water table refers to a saturated zone in the soil. Table 18 indicates, by month, depth to the top (*upper limit*) and base (*lower limit*) of the saturated zone in most years. Estimates of the upper and lower limits are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

Flooding is the temporary inundation of an area caused by overflowing streams or by runoff from adjacent slopes. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Duration and *frequency* are estimated. Duration is expressed as *extremely brief* if 0.1 hour to 4 hours, *very brief* if 4 hours to 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. *None* means that flooding is not probable; *very rare* that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); *frequent* that it is likely to occur often under normal weather conditions (the chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and *very frequent* that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year).

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

Physical and Chemical Analyses of Selected Soils

The results of physical analyses of several typical pedons in the survey area are given in table 19 and the results of chemical analyses in table 20. The data are for soils sampled at carefully selected sites. The pedons are typical of the series. They are described in the section "Soil Series and Their Morphology." Soil samples were analyzed by the National Soil Survey Laboratory, Natural Resources Conservation Service, Lincoln, Nebraska, and the Kentucky Agricultural Experiment Station, Lexington, Kentucky.

Most determinations, except those for grain-size analysis and bulk density, were made on soil material smaller than 2 millimeters in diameter. Measurements reported as percent or quantity of unit weight were calculated on an ovendry basis. The methods used in obtaining the data are indicated in the list that follows. The codes in parentheses refer to published methods *(43).*

Coarse materials—(2-75 mm fraction) weight estimates of the percentages of all material less than 75 mm (3B1).
Coarse materials—(2-250 mm fraction) volume estimates of the percentages of all material greater than 2 mm (3B2).
Sand—(0.05-2.0 mm fraction) weight percentages of material less than 2 mm (3A1).
Silt—(0.002-0.05 mm fraction) pipette extraction, weight percentages of all material less than 2 mm (3A1).
Clay—(fraction less than 0.002 mm) pipette extraction, weight percentages of material less than 2 mm (3A1).
Water retained—pressure extraction, percentage of ovendry weight of less than 2 mm material; 1/3 or 1/10 bar (4B1), 15 bars (4B2).
Water-retention difference—between 1/3 bar and 15 bars for whole soil (4C1).
Bulk density—of less than 2 mm material, saran-coated clods field moist (4A1a), 1/3 bar (4A1d), ovendry (4A1h).
Organic carbon—wet combustion. Walkley-Black modified acid-dichromate, ferric sulfate titration (6A1c).
Extractable cations—ammonium acetate pH 7.0, atomic absorption; calcium (6N2e), magnesium (6O2d), sodium (6P2b), potassium (6Q2b).
Extractable acidity—barium chloride-triethanolamine IV (6H5a).
Cation-exchange capacity—ammonium acetate, pH 7.0, steam distillation (5A8b).
Cation-exchange capacity—sum of cations (5A3a).
Effective cation-exchange capacity—sum of extractable cations plus aluminum (5A3b).
Base saturation—ammonium acetate, pH 7.0 (5C1).
Base saturation—sum of cations, TEA, pH 8.2 (5C3).
Reaction (pH)—1:1 water dilution (8C1f).
Reaction (pH)—potassium chloride (8C1g).
Reaction (pH)—calcium chloride (8C1f).
Sesquioxides—dithionate-citrate extract; iron (6C2h), aluminum (6G7b), manganese (6D2g).
Extractable phosphorus—Bray P-1 (6S3).

Additional Test Methods

Available phosphorus—Procedure 656 (Kentucky Experiment Station).
Field sampling—site selection (1A1).
Field sampling—soil sampling (1A2).
Laboratory preparation—standard (air dry) material (1B1).
Particles—less than 2 mm (2A1).
Data sheet symbols—(2B).
Cation-exchange capacity—ammonium acetate, pH 7.0 (5A1a).
Total nitrogen—Kjeldahl digestion II (6B3a).
Total sulfur—SO_2 evolution (6R3a).
Clay ratio—(8D1).

Mineralogy of Selected Soils

The results of mineralogy determinations of several pedons are given in tables 21 and 22. The pedons are representative of the series described in the section "Soil Series and Their Morphology." The samples were analyzed by the National Resources Conservation Service, Lincoln, Nebraska, and the Kentucky Agricultural Experiment Station, University of Kentucky, Lexington, Kentucky. Sand-silt mineralogy was determined on the soil material 2.0 to 0.00 mm. Clay mineralogy was determined on the soil material smaller than 0.002 mm. The tests and methods used in obtaining the data are indicated on the list that follows. The codes in parentheses refer to published methods *(47).*

Mineralogy—optical analysis (7B1).
Mineralogy—instrumental analysis - Xray diffraction (7A21).
Mineralogy—total analysis - HF dissolution (7C3).

Engineering Index Test Data

Table 23 shows laboratory test data for several pedons sampled at carefully selected sites in the survey area. Unless otherwise noted, the pedons

are representative of the series described in the section "Soil Series and Their Morphology." The soil samples were tested by the Soil Mechanics Laboratory, Natural Resources Conservation Service, Fort Worth, Texas.

The testing methods generally are those of the American Association of State Highway and Transportation Officials (AASHTO) or the American Society for Testing and Materials (ASTM).

The tests and methods are: Unified classification—D 2487 (ASTM), D 422 (ASTM); Liquid limit—D 4318 (ASTM); Plasticity index—D 4318 (ASTM); Moisture density—D 698 (ASTM); and Specific gravity—T 100 (AASHTO).

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(45, 49)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 24 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Twelve soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol.* An example is Alfisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udalf (*Ud,* meaning humid, plus *alf,* from Alfisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Hapludalfs (*Hapl,* meaning minimal horizonation, plus *udalf,* the suborder of the Alfisols that has a udic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Hapludalfs.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle size, mineral content, soil temperature regime, soil depth, and reaction. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-silty, mixed, mesic Typic Hapludalfs.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the “Soil Survey Manual” *(48)*. Many of the technical terms used in the descriptions are defined in “Soil Taxonomy” *(45)* and in “Keys to Soil Taxonomy” *(49)*. Unless otherwise indicated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

Allegheny Series

The Allegheny series consists of very deep, well drained, moderately permeable soils. These soils formed in mixed alluvium. They are on stream terraces along the Kentucky River. Slopes range from 2 to 12 percent. Allegheny soils are fine-loamy, mixed, mesic Typic Hapludults.

Allegheny soils are associated on the landscape with Elk, Monongahela, and Otwell soils. Elk and

Otwell soils are in a fine-silty family. Monongahela and Otwell soils have a fragipan in the subsoil and are moderately well drained.

Typical pedon of Allegheny loam, 6 to 12 percent slopes, eroded; about 13 miles northeast of Lancaster, 1,600 feet west of Kentucky Highway 39, about 1,600 feet south of the Kentucky River; USGS Little Hickman topographic quadrangle; lat. 37 degrees 46 minutes 57 seconds N. and long. 84 degrees 31 minutes 50 seconds W.

Ap—0 to 5 inches; brown (10YR 4/3) loam; weak fine granular structure; very friable; common fine roots; moderately acid; clear smooth boundary.

Bt1—5 to 17 inches; dark yellowish brown (10YR 4/4) loam; weak medium subangular blocky structure; friable; common fine roots; few distinct clay films on faces of peds; few fine black manganese concretions; moderately acid; clear smooth boundary.

Bt2—17 to 48 inches; strong brown (7.5YR 4/6) loam; moderate medium subangular blocky structure; friable; few fine roots; common distinct clay films on faces of peds; strongly acid; clear smooth boundary.

Bt3—48 to 60 inches; strong brown (7.5YR 5/6) loam; moderate medium subangular blocky structure; friable; common distinct clay films on faces of peds; strongly acid; clear smooth boundary.

Bt4—60 to 80 inches; strong brown (7.5YR 5/8) loam; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds; 2 percent pebbles; strongly acid.

Depth to bedrock is more than 60 inches. Reaction ranges from extremely acid to strongly acid unless the soil is limed. The content of rock fragments, mostly pebbles, ranges from 0 to 15 percent throughout the profile.

The Ap horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 2 to 4. Texture is loam.

Some pedons have a BA horizon. This horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 8. Texture is fine sandy loam, sandy loam, loam, or silt loam.

The Bt horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 3 to 8. Texture is clay loam, sandy clay loam, loam, silt loam, or silty clay loam.

Some pedons have a BC or C horizon that is mottled in shades of brown, red, or yellow. Texture is fine sandy loam, loam, sandy clay loam, or clay loam or their gravelly analogues.

Beasley Series

The Beasley series consists of deep, well drained, moderately slowly permeable and slowly permeable soils. These soils formed in material weathered from soft calcareous shale, siltstone, and limestone. They are on ridges and side slopes in the uplands, mainly in the Outer Bluegrass part of the survey area. Slopes range from 2 to 12 percent. Beasley soils are fine, mixed, mesic Typic Hapludalfs.

Beasley soils are associated on the landscape with Crider, Faywood, Garlin, Hagerstown, and Lowell soils. Crider soils are in a fine-silty family and have bedrock at a depth of more than 60 inches. Faywood soils have hard bedrock at a depth of 20 to 40 inches. Garlin soils are in a fine-loamy family and have bedrock at a depth of less than 20 inches. Hagerstown and Lowell soils have hard bedrock at a depth of more than 40 inches.

Typical pedon of Beasley silt loam, 2 to 6 percent slopes; about 6 miles east of Stanford, about 0.75 mile south of Kentucky Highway 150, about 800 feet west of a pond; USGS Crab Orchard topographic quadrangle; lat. 37 degrees 27 minutes 30 seconds N. and long. 84 degrees 34 minutes 28 seconds W.

Ap—0 to 8 inches; brown (10YR 4/3) silt loam; weak medium granular structure; friable; common fine roots; neutral; abrupt smooth boundary.

Bt1—8 to 16 inches; strong brown (7.5YR 4/6) silty clay; moderate medium subangular blocky structure; firm; common fine roots; common distinct clay films on faces of peds; neutral; clear smooth boundary.

Bt2—16 to 35 inches; yellowish brown (10YR 5/6) clay; common medium distinct light olive brown (2.5Y 5/4) mottles; moderate medium angular blocky structure; very firm; few fine roots; common distinct clay films on faces of peds; few fine black manganese concretions; slightly alkaline; gradual smooth boundary.

C—35 to 45 inches; olive yellow (2.5Y 6/6) silty clay; common medium distinct yellowish brown (10YR 5/6) and common medium prominent light brownish gray (10YR 6/2) mottles; massive; very firm; strongly effervescent; moderately alkaline; gradual smooth boundary.

Cr—45 to 50 inches; olive and gray calcareous siltstone and shale; strongly effervescent.

Depth to soft calcareous shale and siltstone is more than 40 inches. Reaction ranges from very strongly acid to slightly alkaline in the Ap and Bt horizons and from neutral to moderately alkaline in the C horizon.

The content of fragments of limestone, shale, and siltstone ranges from 0 to 10 percent in the Ap and Bt horizons and from 0 to 35 percent in the C horizon.

The Ap horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 to 4. Texture is silt loam.

The Bt horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 8. In most pedons the horizon has few to many mottles in shades of red, brown, or yellow and shades of gray in the lower part. Texture is silty clay or clay.

The C horizon has colors in shades of gray, olive, red, and brown. Texture is clay or silty clay.

Berea Series

The Berea series consists of moderately deep, moderately well drained, moderately slowly permeable soils. These soils formed in a loamy mantle over material weathered from black shale. They are on broad ridgetops in the uplands, mainly in the Knobs region of the survey area. Slopes range from 2 to 6 percent. Berea soils are fine-silty, mixed, mesic Aquic Hapludults.

Berea soils are associated on the landscape with Greenbriar, Johnsburg, Mullins, and Trappist soils. Greenbriar soils are well drained and have bedrock at a depth of more than 40 inches. Johnsburg and Mullins soils have bedrock at a depth of more than 40 inches and have fragipans. Mullins soils are poorly drained. Trappist soils are well drained and are in a clayey textured family.

Typical pedon of Berea silt loam, 2 to 6 percent slopes; about 8 miles southeast of Stanford, 2,500 feet northeast of the William Whitley House, 1,200 feet east of Sportsmans Hill; USGS Crab Orchard topographic quadrangle; lat. 37 degrees 27 minutes 41 seconds N. and long. 84 degrees 32 minutes 29 seconds W.

Ap—0 to 8 inches; brown (10YR 4/3) silt loam; moderate fine granular structure; very friable; many fine roots; neutral; clear wavy boundary.

Bt1—8 to 13 inches; light olive brown (2.5Y 5/4) silt loam; moderate medium subangular blocky structure; friable; common fine roots; few fine pores; few distinct clay films on faces of peds and in pores; common distinct brown (10YR 4/3) coats in root channels and pores; 2 percent black shale channers; very strongly acid; clear wavy boundary.

Bt2—13 to 20 inches; light yellowish brown (2.5Y 6/4) silt loam; moderate medium subangular blocky structure; friable; common fine roots; common distinct clay films on faces of peds and in pores; 2 percent black shale channers; very strongly acid; clear wavy boundary.

Bt3—20 to 26 inches; light yellowish brown (2.5Y 6/4) silt loam; moderate medium subangular blocky structure; firm; common distinct clay films on faces of peds; common fine distinct olive yellow (2.5Y 6/8) soft masses of iron concentration and common medium distinct light gray (2.5Y 7/2) iron depletions; 2 percent black shale channers; very strongly acid; clear wavy boundary.

2Cr—26 to 30 inches; black (N 2/0) weathered shale; extremely acid; abrupt broken boundary.

2R—30 inches; black (10YR 2/1) hard fissile shale.

Depth to hard black shale bedrock ranges from 20 to 40 inches. Reaction ranges from extremely acid to strongly acid unless the soil is limed. The content of rock fragments ranges from 0 to 15 percent in the A and B horizons and from 10 to 75 percent in the 2C horizon.

The Ap horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 to 4. Texture is silt loam.

Some pedons have a BA horizon. This horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 2 to 4. Texture is silt loam or silty clay loam.

The Bt horizon has hue of 7.5YR to 2.5Y and value and chroma of 4 to 6. It has few or common iron depletions and concentrations in shades of gray, brown, and yellow in the lower part. Texture of the fine-earth fraction is silt loam or silty clay loam.

Some pedons have a 2C horizon. This horizon has hue of 7.5YR to 2.5Y, value of 3 to 6, and chroma of 4 to 6. It has few or common iron depletions and concentrations in shades of gray, brown, olive, and red. Texture of the fine-earth fraction is silty clay loam or silty clay.

Boonesboro Series

The Boonesboro series consists of moderately deep, well drained, moderately rapidly permeable soils. These soils formed in alluvium over limestone bedrock. They are on narrow flood plains, mainly in the Inner Bluegrass, Outer Bluegrass, and Hills of the Bluegrass regions of the survey area. Slopes range from 0 to 2 percent. Boonesboro soils are fine-loamy, mixed, mesic Fluventic Hapludolls.

Boonesboro soils are associated on the landscape with Newark and Nolin soils. Newark and Nolin soils are deep. Newark soils are somewhat poorly drained and are in a fine-silty family. Nolin soils are in a fine-silty family.

Typical pedon of Boonesboro silt loam, frequently flooded; about 12 miles east of Lancaster, 1.1 miles south of the intersection of Frog Branch Road and Halcomb Lane, 0.5 mile west of Halcomb Lane, on the east side of Frog Branch; USGS Paint Lick

topographic quadrangle; lat. 84 degrees 34 minutes 28 seconds N. and long. 37 degrees 34 minutes 04 seconds W.

Ap—0 to 7 inches; dark brown (10YR 3/3) silt loam; moderate medium granular structure; very friable; few fine roots; slightly alkaline; clear smooth boundary.

AB—7 to 16 inches; dark brown (10YR 3/3) gravelly silt loam; weak medium granular structure; friable; few fine roots; about 15 percent gravel; slightly alkaline; clear smooth boundary.

Bw—16 to 32 inches; dark brown (10YR 4/3) gravelly silt loam; weak medium subangular blocky structure; friable; few fine pores; about 15 percent rounded gravel; slightly alkaline; clear smooth boundary.

C—32 to 37 inches; dark yellowish brown (10YR 4/4) gravelly silty clay loam; common medium distinct reddish brown (2.5YR 5/4) mottles; single grain; loose; common fine pores; common fine black manganese concretions; about 20 percent rounded gravel; slightly alkaline; abrupt smooth boundary.

R—37 inches; hard gray limestone.

Depth to limestone bedrock ranges from 20 to 40 inches. Reaction ranges from slightly acid to moderately alkaline. The content of fragments of limestone, chert, and siltstone ranges from 0 to 20 percent in the A horizon and from 15 to 75 percent in the B and C horizons.

The Ap and AB horizons have hue of 7.5YR or 10YR, value of 3, and chroma of 2 or 3. Texture of the fine-earth fraction is silt loam.

The Bw horizon has hue of 10YR or 7.5YR, value of 4, and chroma of 2 to 4. Texture of the fine-earth fraction is silt loam, silty clay loam, loam, or clay loam.

Some pedons have a C horizon. This horizon has the same colors and textures as the Bw horizon.

Caneyville Series

The Caneyville series consists of moderately deep, well drained, slow permeable soils. These soils formed in fine textured residuum weathered from limestone. They are on ridgetops and knolls on uplands. Slopes range from 12 to 30 percent. Canveyville soils are fine, mixed, mesic Typic Hapludalfs.

Caneyville soils are associated on the landscape with Christian, Garmon, and Frankstown soils. Christian and Frankstown soils are on ridgetops below the Caneyville soils and have bedrock at a depth of more than 40 inches. Frankstown soils are in a fine-loamy family. Garmon soils are on side slopes below the Caneyville soils and are in a fine-loamy family.

Typical pedon of Caneyville silt loam, 12 to 30 percent slopes, eroded, rocky; about 12.3 miles southwest of Stanford, 4 miles west of Kings Mountain, 0.1 mile east of the intersection of Angel Ridge Road and Moccasin Creek Road, 200 feet south of a barn at a farm entrance; USGS Halls Gap topographic quadrangle; lat. 37 degrees 22 minutes 40 seconds N. and long. 84 degrees 43 minutes 55 seconds W.

Ap—0 to 3 inches; brown (10YR 4/3) silt loam; weak fine granular structure; friable; common fine roots; moderately acid; abrupt smooth boundary.

Bt1—3 to 10 inches; strong brown (7.5YR 5/6) silty clay loam; moderate medium subangular blocky structure; firm; few fine roots; few distinct clay films on faces of peds and in pores; moderately acid; clear smooth boundary.

Bt2—10 to 18 inches; strong brown (7.5YR 5/8) silty clay; moderate medium subangular blocky structure; very firm; common distinct clay films on faces of peds and in pores; moderately acid; clear smooth boundary.

Bt3—18 to 36 inches; yellowish red (5YR 5/6) silty clay; common medium distinct pale brown (7.5YR 6/3) mottles; moderate medium subangular blocky structure; very firm; many distinct clay films on faces of peds; neutral; abrupt smooth boundary.

R—36 inches; limestone bedrock.

Depth to bedrock ranges from 20 to 40 inches. Reaction ranges from very strongly acid to slightly alkaline. The content of fragments of limestone or chert ranges from 0 to 10 percent in the A and Bt horizons and from 0 to 35 percent in the C horizon.

The Ap horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma or 2 to 4. Texture is silt loam.

Some pedons have a BA horizon. This horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 4 to 6. Texture is silt loam or silty clay loam.

The Bt horizon has hue of 2.5YR to 10YR, value of 4 or 5, and chroma of 4 to 6. In some pedons, this horizon has mottles in shades of red, brown, or gray in the lower part. Texture is silty clay loam, silty clay, or clay.

Some pedons have a C horizon. This horizon has colors similar to those of the Bt horizon. Texture of the fine-earth fraction is silty clay or clay.

Carpenter Series

The Carpenter series consists of deep and very deep, well drained, moderately permeable soils. These

soils formed in loamy colluvium over fine textured residuum weathered from shale or siltstone. They are on side slopes, on footslopes, and on narrow low ridges in the uplands, mainly in the Knobs region of the survey area. Slopes range from 2 to 30 percent. Carpenter soils are fine-loamy, mixed, mesic Ultic Hapludalfs.

Carpenter soils are associated on the landscape with Colyer, Garmon, Lenberg, Tilsit, and Trappist soils. Colyer soils are on side slopes below the Carpenter soils, have hard shale bedrock at a depth of 8 to 20 inches, and are in a clayey-skeletal family. Garmon soils are on side slopes and narrow ridgetops above the Carpenter soils and are underlain by hard bedrock at a depth of 20 to 40 inches. Lenberg soils are underlain by soft shale bedrock at a depth of 20 to 40 inches and are in a fine textured family. Tilsit soils are on ridges below the Carpenter soils, are moderately well drained, and are in a fine-silty family. Trappist soils are on side slopes below the Carpenter soils, are underlain by hard bedrock at a depth of 20 to 40 inches, and are in a clayey family.

Typical pedon of Carpenter gravelly silt loam in an area of Carpenter-Lenberg complex, 12 to 30 percent slopes, eroded; about 5.6 miles southwest of Stanford, 0.6 mile west of Kentucky Highway 698, about 40 feet north of Jumbo School Road; USGS Halls Gap topographic quadrangle; lat. 37 degrees 27 minutes 43 seconds N. and long. 84 degrees 42 minutes 05 seconds W.

Oa—1 inch to 0; loose leaf litter.

Ap—0 to 5 inches; yellowish brown (10YR 5/4) gravelly silt loam; weak fine granular structure; very friable; common fine roots; about 15 percent fragments of siltstone; moderately acid; abrupt smooth boundary.

BA—5 to 12 inches; yellowish brown (10YR 5/6) gravelly silt loam; moderate medium subangular blocky structure; friable; common fine roots; about 15 percent fragments of siltstone; strongly acid; clear smooth boundary.

Bt1—12 to 24 inches; strong brown (7.5YR 5/6) gravelly silty clay loam; moderate medium subangular blocky structure; firm; common fine roots; common faint clay films on faces of peds and in pores; about 15 percent fragments of siltstone; strongly acid; clear smooth boundary.

Bt2—24 to 42 inches; strong brown (7.5YR 5/6) gravelly silty clay loam; moderate medium subangular blocky structure; firm; common distinct clay films on faces of peds and in pores; about 15 percent fragments of siltstone and shale; strongly acid; clear smooth boundary.

2C—42 to 52 inches; yellowish brown (10YR 5/6) channery silty clay; common medium prominent pale red (2.5YR 6/2) and common medium distinct pale brown (10YR 6/3) mottles; massive; very firm; about 20 percent shale and siltstone channers; very strongly acid; clear smooth boundary.

2Cr—52 to 65 inches; soft grayish green shale.

Depth to soft bedrock is 40 to 80 inches or more. Reaction ranges from very strongly acid to slightly acid. The content of rock fragments ranges from 15 to 20 percent in the A horizon, from 10 to 30 percent in the B horizon, and from 10 to 35 percent in the 2C horizon.

The Ap horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 3 to 6. Some pedons have an A horizon 1 to 3 inches thick. This horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 or 3. Texture of the fine-earth fraction is silt loam.

The BA horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 3 to 6. Texture of the fine-earth fraction is silt loam or loam.

The Bt horizon has hue of 5YR to 5Y, value of 4 to 6, and chroma of 3 to 8. In some pedons, the horizon has few to many red, brown, or gray mottles in the lower part. Texture of the fine-earth fraction is silty clay loam, clay loam, or loam.

The 2C horizon has colors similar to those of the Bt horizon. Texture of the fine-earth fraction is silty clay loam, silty clay, or clay.

Chenault Series

The Chenault series consists of deep and very deep, well drained, moderately permeable soils. These soils formed in old alluvium over residuum of weathered limestone. They are on karst ridgetops and side slopes on old high terraces, mainly along the Dix and Kentucky Rivers. Slopes range from 2 to 25 percent. Chenault soils are fine-loamy, mixed, mesic Typic Hapludalfs.

Chenault soils are associated on the landscape with Fairmount, Faywood, Lowell, and Sandview soils. Fairmount, Faywood, and Lowell soils are in a fine textured family. Fairmount soils are on the lower side slopes, have a mollic epipedon, and have bedrock at a depth of 10 to 20 inches. Faywood soils have bedrock at a depth of 20 to 40 inches. Lowell soils are in a fine textured family. Sandview soils are on adjacent broad ridgetops and are in a fine-silty family.

Typical pedon of Chenault gravelly silt loam, 6 to 12 percent slopes; about 10.1 miles northwest of Lancaster on Fisher Ford Road, 0.3 mile west of the intersection of Sharp Road and Fisher Ford Road, 600

feet south of Fisher Ford Road; USGS Bryantsville topographic quadrangle; lat. 37 degrees 42 minutes 31 seconds N. and long. 84 degrees 43 minutes 10 seconds W.

Ap—0 to 7 inches; dark yellowish brown (10YR 4/4) gravelly silt loam; moderate fine granular structure; friable; few fine roots; about 15 percent pebbles; neutral; abrupt smooth boundary.

Bt1—7 to 15 inches; dark yellowish brown (10YR 4/6) gravelly silty clay loam; moderate medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; about 15 percent pebbles; neutral; clear smooth boundary.

Bt2—15 to 32 inches; strong brown (7.5YR 4/6) gravelly silty clay loam; moderate medium subangular blocky structure; friable; common distinct clay films on faces of peds; about 15 percent pebbles; moderately acid; clear smooth boundary.

Bt3—32 to 48 inches; strong brown (7.5YR 5/6) gravelly silty clay loam; few medium distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; friable; common distinct clay films on faces of peds; about 20 percent pebbles; strongly acid; clear smooth boundary.

2C—48 to 58 inches; yellowish brown (10YR 5/6) gravelly silty clay; massive; very firm; common fine and medium light brownish gray (10YR 6/2) iron depletions; about 30 percent pebbles; moderately acid; abrupt smooth boundary.

R—58 inches: hard limestone.

Depth to bedrock is 40 to 80 inches. Reaction ranges from strongly acid to neutral. The content of rock fragments ranges from 5 to 30 percent in the A horizon, from 10 to 30 percent in the Bt horizon, and from 5 to 30 percent in the 2C horizon.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 3 or 4. Texture of the fine-earth fraction is silt loam.

The Bt horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 6. In most pedons, the horizon has few or common mottles in shades of brown in the lower part. Texture of the fine-earth fraction is silty clay loam, clay loam, or loam.

Some pedons have a 2Bt horizon. This horizon has colors similar to those of the Bt horizon. It has few to many brown mottles or gray iron depletions. Texture of the fine-earth fraction is silty clay loam, silty clay, or clay.

The 2C horizon has hue of 7.5YR or 10YR, value of 3 to 7, and chroma of 1 to 8. Texture of the fine-earth fraction is silty clay or clay.

Christian Series

The Christian series consists of very deep, well drained, moderately slow permeable soils. These soils formed in fine textured residuum weathered from interbedded limestone, sandstone, siltstone, and shale. They are on ridgetops and side slopes in the uplands, mainly in the Pennyroyal region of the survey area. Slopes range from 2 to 25 percent. Christian soils are clayey, mixed, mesic Typic Hapludults.

Christian soils are associated on the landscape with Frankstown, Lily, Pricetown, and Teddy soils. Frankstown, Lily, and Teddy soils are in a fine-loamy family. Frankstown soils are on the lower ridgetops and side slopes. Lily soils have bedrock at a depth of 20 to 40 inches. Pricetown soils are on broad ridgetops and are in a fine-silty family. Teddy soils are on broad ridgetops, have a fragipan, and are moderately well drained.

Typical pedon of Christian silt loam, 6 to 12 percent slopes, eroded; about 17 miles south of Stanford, 1.5 miles northeast of Eubank, 300 feet east of U.S. Highway 27, and 600 feet north of Clear Fork Road; USGS Eubank topographic quadrangle; lat. 37 degrees 17 minutes 55 seconds N. and long. 87 degrees 38 minutes 53 seconds W.

Ap—0 to 5 inches; yellowish brown (10YR 5/4) silt loam; weak fine granular structure; friable; common fine and medium roots; about 5 percent gravel; neutral; abrupt smooth boundary.

Bt1—5 to 18 inches; yellowish red (5YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; few medium roots; few faint clay films on faces of peds and in pores; about 10 percent gravel; moderately acid; abrupt smooth boundary.

Bt2—18 to 32 inches; red (2.5YR 4/8) silty clay; moderate medium angular blocky structure; firm; common distinct clay films on faces of peds and in pores; about 10 percent gravel; strongly acid; clear smooth boundary.

Bt3—32 to 48 inches; red (2.5YR 4/6) silty clay; common medium prominent brownish yellow (10YR 6/6) mottles; moderate medium angular blocky structure; very firm; many distinct clay films on faces of peds; about 10 percent gravel; extremely acid; clear smooth boundary.

Bt4—48 to 72 inches; red (2.5YR 4/6) gravelly clay; common medium prominent brownish yellow (10YR 6/8) mottles; moderate medium angular blocky structure; very firm; many distinct clay films on faces of peds; about 15 percent gravel; extremely acid; clear smooth boundary.

Bt5—72 to 90 inches; red (2.5YR 4/6) gravelly clay; few medium prominent light yellowish brown (10YR 6/4) mottles; moderate medium angular blocky structure; very firm; common distinct clay films on faces of peds; about 15 percent gravel; extremely acid.

Depth to bedrock is more than 72 inches. Reaction ranges from extremely acid to slightly acid, unless the soil is limed. The content of rock fragments ranges from 0 to 30 percent throughout the profile.

The Ap horizon has hue of 7.5YR to 10YR, value of 4 or 5, and chroma of 3 or 4. Texture of the fine-earth is silt loam.

The Bt horizon has hue of 10R to 5YR, value of 3 to 5, and chroma of 4 to 8. The horizon has few or common mottles in shades of brown or yellow. Texture of the fine-earth fraction is silty clay loam, silty clay, or clay.

Some pedons have BC or C horizons. These horizons have colors and textures similar to those of the Bt horizon.

Colyer Series

The Colyer series consists of shallow, well drained, slowly permeable soils. These soils formed in material weathered from black fissile shale. They are on narrow ridgetops and side slopes in the uplands, mainly in the Knobs region of the survey area. Slopes range 12 to 60 percent. Colyer soils are clayey-skeletal, mixed, mesic Lithic Dystrochrepts.

Colyer soils are associated on the landscape with Carpenter, Jessietown, Lenberg, and Trappist soils. The associated soils have argillic horizons. Carpenter and Lenberg soils are on side slopes above the Colyer soils. Carpenter soils are deep and in a fine-loamy family. Lenberg soils have soft shale bedrock at a depth of 20 to 40 inches and are in a fine textured family. Jessietown soils are on adjacent ridgetops, are moderately deep, and belong to a fine-silty family. Trappist soils are moderately deep and belong to a clayey family.

Typical pedon of Colyer silty clay loam in an area of Trappist-Colyer complex, 12 to 25 percent slopes, eroded; about 10.6 miles southwest of Stanford, 3,000 feet northeast of Meetinghouse Knob, 300 feet east of Kentucky Highway 198; USGS Hustonville topographic quadrangle; lat. 37 degrees 25 minutes 36 seconds N. and long. 84 degrees 46 minutes 43 seconds W.

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) silty clay loam; moderate very fine granular structure; friable; many very fine and fine roots; 10 percent channers of shale; neutral; abrupt smooth boundary.

Bw—9 to 14 inches; yellowish brown (10YR 5/4) very channery silty clay; common medium distinct strong brown (7.5YR 5/6) mottles; firm; many fine roots around channers; 60 percent channers of shale; strongly acid; clear smooth boundary.

R—14 inches; black (N 2/0) hard fissile shale.

Depth to hard shale bedrock ranges from 8 to 20 inches. Reaction ranges from extremely acid to moderately acid, unless the soil is limed. The content of rock fragments ranges from 5 to 15 percent in the A horizon, from 35 to 55 in the Bw horizon, and from 50 to 90 percent in the C horizon.

The Ap horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 to 4. Texture is silty clay loam.

The Bw horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 4 to 6. Texture of the fine-earth fraction is silty clay loam, silty clay, or clay.

Some pedons have a C horizon. This horizon has colors and textures similar to those of the B horizon. In some pedons, it has mottles in shades of gray or olive.

Crider Series

The Crider series consists of very deep, well drained, moderately permeable soils. These soils formed in a silty mantle over residuum weathered from limestone. They are on broad ridgetops in the uplands, mainly in the Outer Bluegrass part of the survey area. Slopes range from 2 to 12 percent. Crider soils are fine-silty, mixed, mesic Typic Paleudalfs.

Crider soils are associated on the landscape with Berea, Faywood, Greenbriar, Lowell, Sandview, and Trappist soils. Berea, Greenbriar, and Trappist soils are on slopes above the Crider soils and formed in material weathered from black shale. Berea, Faywood, and Trappist soils have bedrock at a depth of 20 to 40 inches. Berea soils are moderately well drained. Faywood and Lowell soils are on the adjacent, slightly lower-lying side slopes and ridgetops and are in a fine textured family. Greenbriar soils have a solum less than 60 inches thick. Sandview soils are on adjacent ridgetops, have a 2B horizon with hue of 7.5YR to 2.5Y, and are Hapludalfs. Trappist soils are in a clayey family.

Typical pedon of Crider silt loam, 2 to 6 percent slopes; about 7.2 miles southeast of Stanford, 1,200 feet south of U.S. Highway 150, about 500 feet west of Will Chancellor Road; USGS Crab Orchard topographic quadrangle; lat. 37 degrees 29 minutes 18 seconds N. and long. 84 degrees 34 minutes 25 seconds W.

Ap—0 to 8 inches; brown (10YR 4/3) silt loam; weak fine granular structure; friable; few fine roots; neutral; clear smooth boundary.

Bt1—8 to 19 inches; dark yellowish brown (10YR 4/4) silt loam; moderate medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; few fine black manganese concretions; slightly acid; clear smooth boundary.

Bt2—19 to 32 inches; strong brown (7.5YR 5/8) silty clay loam; moderate medium subangular blocky structure; firm; few fine roots; few distinct clay films on faces of peds; few fine black manganese concretions; slightly acid; clear smooth boundary.

2Bt3—32 to 42 inches; yellowish red (5YR 5/6) silty clay; common medium prominent very pale brown (10YR 7/4) mottles; moderate medium subangular blocky structure; firm; few fine roots; common distinct clay films on faces of peds; few fine black manganese concretions; moderately acid; clear smooth boundary.

2Bt4—42 to 64 inches; yellowish red (5YR 5/6) silty clay; few fine distinct very pale brown (10YR 7/4) mottles; moderate medium subangular blocky structure; firm; common distinct clay films on faces of peds; few fine black concretions; strongly acid.

Depth to bedrock is more than 60 inches. Reaction ranges from strongly acid to neutral. The content of rock fragments, mostly chert, ranges from 0 to 15 percent throughout the profile.

The Ap horizon has hue of 7.5YR to 10YR, value of 4 or 5, and chroma of 2 to 4. Texture is silt loam.

The Bt horizon has hue of 7.5YR to 10YR, value of 4 or 5, and chroma of 4 to 6. Texture is silt loam or silty clay loam.

The 2Bt horizon has hue of 10R to 5YR, value of 3 to 5, and chroma of 4 to 8. In some pedons, it has few or common mottles in shades of red, brown, or yellow in the upper part and shades of gray in the lower part. Texture is silty clay or clay.

Culleoka Series

The Culleoka series consist of moderately deep, well drained, moderately rapidly permeable soils. These soils formed in colluvium or weathered residuum from siltstone or interbedded shale, limestone, siltstone, and fine-grained sandstone. They are on steep hillsides and narrow ridgetops, mainly in the Hills of the Bluegrass region of the survey area. Slopes range from 2 to 50 percent. Culleoka soils are fine-loamy, mixed, mesic Ultic Hapludalfs.

Culleoka soils are associated on the landscape with Cynthiana, Eden, Faywood, and Lowell soils. Cynthiana, Faywood, and Lowell soils are on ridgetops above the Culleoka soils. Cynthiana soils have bedrock at a depth of 10 to 20 inches and belong to a clayey family. Eden, Faywood, and Lowell soils belong to a fine textured family. Eden soils are on the adjacent or lower side slopes. Lowell soils have bedrock at a depth of more than 40 inches.

Typical pedon of Culleoka silt loam, 6 to 12 percent slopes, eroded; about 8 miles northeast of Lancaster, 0.75 mile west of Kentucky Highway 39, about 1,000 feet northwest of a farmhouse; USGS Buckeye topographic quadrangle; lat. 37 degrees 41 minutes 13 seconds N. and long. 84 degrees 31 minutes 20 seconds W.

Ap—0 to 7 inches; brown (10YR 4/3) silt loam; weak fine granular structure; friable; common fine roots; about 10 percent siltstone channers; neutral; clear smooth boundary.

Bt—7 to 32 inches; yellowish brown (10YR 4/6) channery silty clay loam; common medium distinct light yellowish brown (2.5Y 6/4) mottles; moderate medium subangular blocky structure; friable; few fine roots; few distinct clay films on faces of peds; about 30 percent siltstone channers; strongly acid; clear smooth boundary.

BC—32 to 38 inches; yellowish brown (10YR 5/4) very channery silty clay loam; weak medium subangular blocky structure; firm; about 45 percent shale and siltstone channers; slightly acid; abrupt smooth boundary.

R—38 inches; hard siltstone.

Depth to hard bedrock is 20 to 40 inches. Reaction is strongly acid or moderately acid, except where the soil is limed. The content of rock fragments ranges from 0 to 35 percent in the A horizon, from 10 to 35 percent in the B horizon, and from 25 to 80 percent in the BC and C horizons.

The Ap horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 to 4. Texture of the fine-earth fraction is silt loam.

The Bt horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 6. Texture of the fine-earth fraction is loam, silt loam, or silty clay loam.

Some pedons have a BC or C horizon. This horizon has colors in shades of brown, olive, or gray. Texture of the fine-earth fraction is loam, silt loam, silty clay loam, clay loam, or silty clay.

Cynthiana Series

The Cynthiana series consists of shallow, well drained, moderately slowly permeable soils. These soils formed in fine textured residuum weathered from

limestone interbedded with thin layers of calcareous shale. They are on narrow ridgetops and side slopes in the uplands, mainly in the Inner Bluegrass, Outer Bluegrass, and Hills of the Bluegrass regions of the survey area. Slopes range from 6 to 50 percent. Cynthiana soils are clayey, mixed, mesic Lithic Hapludalfs.

Cynthiana soils are associated on the landscape with Culleoka, Eden, Faywood, and Lowell soils. Culleoka and Eden soils are on ridgetops and side slopes below the Cynthiana soils. Culleoka soils have bedrock at a depth of 20 to 40 inches and belong to a fine-loamy family. Eden and Faywood soils have bedrock at depth of 20 to 40 inches and belong to a fine family. Lowell soils have bedrock at a depth of more than 40 inches and belong to a fine textured family.

Typical pedon of Cynthiana silty clay loam in an area of Faywood-Cynthiana complex, 12 to 25 percent slopes, eroded, very rocky; about 2 miles northeast of Lancaster, 0.5 mile south of Kentucky Highway 39, about 75 feet east of a farm lane; USGS Buckeye topographic quadrangle; lat. 37 degrees 38 minutes 23 seconds N. and long. 84 degrees 31 minutes 20 seconds W.

Ap—0 to 6 inches; brown (10YR 4/3) silty clay loam; weak medium granular structure; friable; common fine roots; 5 percent limestone channers; slightly acid; clear smooth boundary.

Bt—6 to 16 inches; dark yellowish brown (10YR 4/6) clay; moderate medium angular blocky structure; firm; few fine roots; common distinct clay films on faces of peds; 10 percent limestone channers; neutral; abrupt smooth boundary.

R—16 inches; hard limestone.

Depth to bedrock ranges from 10 to 20 inches. Reaction ranges from slightly acid to slightly alkaline. The content of limestone and shale fragments ranges from 0 to 30 percent in the A horizon and from 5 to 35 percent in the B horizon.

The Ap horizon has hue of 10YR or 2.5Y, value of 4, and chroma of 2 to 4. Texture of the fine-earth fraction is silty clay loam.

The Bt horizon has hue of 10YR to 5Y, value of 4 or 5, and chroma of 4 to 6. Texture of the fine-earth fraction is silty clay or clay.

Donerail Series

The Donerail series consists of very deep, moderately well drained, slowly permeable soils. These soils formed in residuum or alluvium from limestone. They are in concave depressions and along small drainageways, mainly in the Inner and Outer Bluegrass regions of the survey area. Slopes range from 2 to 6 percent. Donerail soils are fine, mixed, mesic Oxyaquic Argiudolls.

Donerail soils are associated on the landscape with Lowell, Nolin, and Sandview soils. The associated soils are well drained and have an ochric epipedon. Lowell and Sandview soils are on the adjacent higher ridges. Nolin and Sandview soils are in a fine-silty family. Sandview soils have a solum that is more than 60 inches thick.

Typical pedon of Donerail silt loam, 2 to 6 percent slopes; about 6 miles north of Lancaster, about 0.5 mile west of the intersection of U.S. Highway 27 and Kentucky Highway 34, about 200 feet west of a farm lane; USGS Bryantsville topographic quadrangle; lat. 37 degrees 41 minutes 20 seconds N. and long. 84 degrees 40 minutes 22 seconds W.

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam; weak fine granular structure; friable; common fine roots; neutral; clear smooth boundary.

AB—8 to 14 inches; dark brown (10YR 3/3) silt loam; moderate medium granular structure; friable; common fine roots; moderately acid; clear smooth boundary.

Bt1—14 to 36 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium subangular blocky structure; firm; few fine roots; few distinct clay films on faces of peds; few fine faint brown (10YR 5/3) iron depletions; moderately acid; clear smooth boundary.

Bt2—36 to 45 inches; brown (7.5YR 5/4) silty clay; moderate medium subangular blocky structure; firm; common distinct clay films on faces of peds; common medium prominent grayish brown (10YR 5/2) iron depletions; moderately acid; clear smooth boundary.

C—45 to 65 inches; variegated yellowish brown (10YR 5/6) and olive (5Y 5/4) clay; massive; very firm; few fine black manganese concretions; many medium distinct grayish brown (10YR 5/2) iron depletions; slightly acid.

Depth to bedrock is more than 60 inches. Reaction ranges from very strongly acid to slightly alkaline.

The Ap horizon has hue of 7.5YR or 10YR and value and chroma of 2 or 3. Texture is silt loam.

The AB horizon has colors similar to those of the Ap horizon. Texture is silt loam or silty clay loam.

The Bt horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 6. The lower part of the horizon has few to many iron depletions and

concentrations in shades of gray and brown. Texture is silty clay loam, silty clay, or clay.

The C horizon is variegated in shades of brown, yellow, olive, and gray. The horizon has few to many iron depletions in shades of gray. Texture is silty clay or clay.

Eden Series

The Eden series consists of moderately deep, well drained, slowly permeable soils. These soils formed in residuum from interbedded calcareous shale, siltstone, and limestone. They are on steep hillsides and narrow ridgetops in the uplands, mainly in the Hills of the Bluegrass region of the survey area. Slopes range from 25 to 50 percent. Eden soils are fine, mixed, mesic Typic Hapludalfs.

Eden soils are associated on the landscape with Culleoka, Cynthiana, Faywood, and Lowell soils. Culleoka soils belong to a fine-loamy family. Cynthiana, Faywood, and Lowell soils are on ridgetops and side slopes above the Eden soils. Faywood soils have hard bedrock at a depth of 20 to 40 inches. Cynthiana soils have bedrock at a depth of 10 to 20 inches. Lowell soils have bedrock at a depth of more 40 inches.

Typical pedon of Eden flaggy silty clay loam in an area of Eden-Culleoka association, 25 to 50 percent slopes, eroded, stony; about 8 miles northeast of Lancaster, 1 mile east of Buckeye, 500 feet north of Oscar Road; USGS Kirksville topographic quadrangle; lat. 37 degrees 43 minutes 20 seconds N. and long. 84 degrees 29 minutes 33 seconds W.

Ap—0 to 5 inches; brown (10YR 4/3) flaggy silty clay loam; moderate fine subangular blocky structure; firm; common fine roots; 15 percent flagstones and channers; neutral; abrupt smooth boundary.

Bt1—5 to 9 inches; light olive brown (2.5Y 5/4) flaggy silty clay; few fine faint light yellowish brown (2.5Y 6/4) mottles; moderate medium subangular blocky structure; firm; few fine roots; common distinct clay films on faces of peds; 15 percent flagstones and channers; slightly alkaline; clear smooth boundary.

Bt2—9 to 24 inches; light olive brown (2.5Y 5/4) flaggy clay; moderate medium subangular blocky structure; firm; common distinct clay films on faces of peds; 15 percent flagstones and channers; slightly alkaline; abrupt smooth boundary.

Cr—24 to 34 inches; shale that is interbedded with layers of limestone.

Depth to bedrock ranges from 20 to 40 inches. Reaction ranges from strongly acid to slightly alkaline. The content of flagstones and channers of limestone and shale ranges from 5 to 20 percent in the A horizon, from 15 to 35 percent in the B horizon, and from 30 to 60 percent in the C horizon.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. Texture of the fine-earth fraction is silty clay loam.

The Bt horizon has hue of 7.5YR to 2.5Y and value and chroma of 4 to 6. The lower part of the horizon has few or common mottles in shades of brown or olive. Texture of the fine-earth fraction is clay or silty clay.

Elk Series

The Elk series consists of very deep, well drained, moderately permeable soils. These soils formed in mixed alluvium. They are on stream terraces throughout the survey area. Slopes range from 2 to 12 percent. Elk soils are fine-silty, mixed, mesic Ultic Hapludalfs.

Elk soils are associated on the landscape with Allegheny, Lawrence, Monongahela, Nolin, Newark, and Otwell soils. Allegheny and Monongahela soils are in a fine-loamy family. Lawrence, Monongahela, and Otwell soils have a fragipan. Lawrence soils are somewhat poorly drained and are on the lower terraces. Monongahela and Otwell soils are moderately well drained. Nolin and Newark soils are on flood plains. Newark soils are somewhat poorly drained.

Typical pedon of Elk silt loam, 2 to 6 percent slopes, rarely flooded; about 8 miles northeast of Lancaster, 1.2 miles east of Buckeye, 150 feet east of a farm lane, 150 feet west of Paint Lick Creek; USGS Kirksville topographic quadrangle; lat. 37 degrees 43 minutes 11 seconds N. and long. 84 degrees 29 minutes 06 seconds W.

Ap—0 to 8 inches; dark yellowish brown (10YR 4/4) silt loam; moderate fine granular structure; friable; few fine roots; slightly acid; clear smooth boundary.

Bt1—8 to 17 inches; dark yellowish brown (10YR 4/6) silt loam; moderate medium subangular blocky structure; friable; few fine roots; few distinct clay films on faces of peds and in pores; moderately acid; clear smooth boundary.

Bt2—17 to 44 inches; strong brown (7.5YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; common distinct clay films on faces of peds and in pores; moderately acid; clear smooth boundary.

Bt3—44 to 65 inches; yellowish brown (10YR 5/6) silty clay loam; common fine distinct light yellowish brown (2.5Y 6/4) mottles; moderate medium

subangular blocky structure; friable; few distinct clay films on faces of peds; 2 percent chert and siltstone fragments; moderately acid.

Depth to bedrock is more than 60 inches. Reaction ranges from very strongly acid to slightly acid, unless the soil is limed. The content of rock fragments, mainly pebbles, ranges from 0 to 5 percent in the A and Bt horizons and from 0 to 35 percent in the C horizon.

The Ap horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 to 4. Texture is silt loam.

The Bt horizon has hue of 7.5YR or 10YR, value of 4 or 5, chroma of 4 to 6. In some pedons, the lower part of the horizon has few or common mottles and iron depletions in shades of brown and gray. Texture is silt loam or silty clay loam.

Some pedons have a C horizon. This horizon has colors similar to those of the Bt horizon. Texture of the fine-earth fraction is silt loam or silty clay loam.

Fairmount Series

The Fairmount series consists of shallow, well drained, slowly permeable or moderately slowly permeable soils. These soils formed in residuum weathered from limestone and mudstone, interbedded with thin layers of calcareous shale. They are on side slopes in the uplands, mainly in the Inner and Outer Bluegrass regions of the survey area. Slopes range from 6 to 60 percent. Fairmount soils are clayey, mixed, mesic Lithic Hapludolls.

Fairmount soils are associated on the landscape with Faywood and Lowell soils. Faywood and Lowell soils have an ochric epipedon and an argillic horizon. Faywood soils are on side slopes and narrow ridgetops and are underlain by bedrock at a depth of 20 to 40 inches. Lowell soils are on side slopes and ridgetops and are underlain by bedrock at depth of more than 40 inches.

Typical pedon of Fairmount silty clay loam in an area of Faywood-Fairmount complex, phosphatic, 12 to 25 percent slopes, eroded, very rocky; about 6 miles northwest of Lancaster, 300 feet east of Fisher Ford Road, 4,000 feet south of Kentucky Highway 1335; USGS Bryantsville topographic quadrangle; lat. 37 degrees 41 minutes 59 seconds N. and long. 84 degrees 41 minutes 49 seconds W.

A—0 to 9 inches; dark brown (10YR 3/3) silty clay loam; weak medium subangular blocky structure; friable; many fine and medium roots; 10 percent limestone channers and flagstones; slightly alkaline; clear smooth boundary.

Bw—9 to 18 inches; dark yellowish brown (10YR 4/4) flaggy silty clay; moderate medium angular blocky structure; firm; common fine roots; 15 percent limestone flagstones and channers; slightly alkaline; abrupt smooth boundary.

R—18 inches; hard limestone.

Depth to bedrock ranges from 10 to 20 inches. Reaction ranges from neutral to moderately alkaline. The content of limestone fragments, mostly channers and flagstones, ranges from 5 to 35 percent throughout the profile.

The A horizon has hue of 10YR or 2.5Y, value of 2 or 3, and chroma of 1 to 3. Texture of the fine-earth fraction is silty clay loam.

The Bw horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 to 4. In some pedons, this horizon has few or common mottles in shades of brown, gray, or olive. Texture of the fine-earth fraction is silty clay loam, silty clay, or clay.

Faywood Series

The Faywood series consists of moderately deep, well drained, slowly permeable or moderately slowly permeable soils. These soils formed in residuum weathered from limestone, interbedded with thin layers of calcareous shale. They are on narrow ridgetops and side slopes in the uplands, mainly in the Inner Bluegrass, Outer Bluegrass, and Hills of the Bluegrass regions of the survey area. Slopes range from 6 to 50 percent. Faywood soils are fine, mixed, mesic Typic Hapludalfs.

Faywood soils are associated on the landscape with Chenault, Cynthiana, Fairmount, Lowell, and Shrouts soils. Chenault soils have bedrock at a depth of more than 40 inches and are in a fine-loamy family. Cynthiana and Fairmount soils have bedrock at a depth of 10 to 20 inches. Fairmount soils have a mollic epipedon. Lowell soils have bedrock at depth of more than 40 inches. Shrouts soils have soft bedrock at a depth of 20 to 40 inches.

Typical pedon of Faywood silty clay loam in an area of Faywood-Cynthiana complex, 12 to 25 percent slopes, eroded, very rocky; about 4 miles north of Lancaster, 0.50 mile south of Kentucky Highway 39, about 75 feet north of a farm lane; USGS Buckeye topographic quadrangle; lat. 37 degrees 38 minutes 17 seconds N. and long. 84 degrees 32 minutes 31 seconds W.

Ap—0 to 6 inches; brown (10YR 4/3) silty clay loam; moderate medium granular structure; friable; common fine roots; 2 percent limestone channers; slightly acid; clear smooth boundary.

Bt1—6 to 18 inches; dark yellowish brown (10YR 4/6) silty clay; moderate medium subangular blocky

structure; firm; common fine roots; few distinct clay films on faces of peds; 2 percent limestone channers; moderately acid; clear smooth boundary.

Bt2—18 to 26 inches; yellowish brown (10YR 5/6) clay; moderate medium angular blocky structure; firm; few fine roots; common distinct clay films on faces of peds; 2 percent limestone channers; moderately acid; clear smooth boundary.

Bt3—26 to 30 inches; light olive brown (2.5Y 5/4) clay; common medium distinct dark yellowish brown (10YR 4/4) mottles; moderate medium angular blocky structure; firm; few distinct clay films on peds; few distinct black manganese stains on faces of peds; 10 percent limestone channers; neutral; abrupt smooth boundary.

R—30 inches; hard limestone.

Depth to bedrock is 20 to 40 inches. Reaction ranges from strongly acid to slightly alkaline. The content of flagstones and channers of limestone ranges from 0 to 15 percent in the A and Bt horizons and from 0 to 35 percent in the C horizon.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. Texture is silty clay loam.

The Bt horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8. The lower part of the horizon has few or common mottles in shades of brown and olive. Texture is silty clay or clay.

Some pedons have a C horizon. This horizon has colors similar to those of the Bt horizon. Texture of the fine-earth fraction is silty clay or clay.

Frankstown Series

The Frankstown series consists of deep and very deep, well drained, moderately permeable soils. These soils formed in residuum weathered from limestone, siltstone, and shale. They are on ridgetops and side slopes in the uplands, mainly in the Pennyroyal region of the survey area. Slopes range from 2 to 25 percent. Frankstown soils are fine-loamy, mixed, mesic Typic Hapludults.

Frankstown soils are associated on the landscape with Christian, Garmon, Lily, Pricetown, and Teddy soils. Christian soils are on the higher ridgetops and side slopes. They have a solum that is more than 60 inches thick and are in a clayey textured family. Garmon soils are on very steep side slopes below the Frankstown soils and have bedrock at a depth of 20 to 40 inches. Lily soils are on the adjacent ridgetops. They have bedrock at a depth of 20 to 40 inches. Pricetown and Teddy soils are on the broad, more level ridgetops. Pricetown soils are in a fine-silty family and have a solum that is more than 60 inches thick. Teddy soils have a fragipan and are moderately well drained. They have a solum that is more than 60 inches thick.

Typical pedon of Frankstown gravelly silt loam, 2 to 6 percent slopes; about 12 miles south of Stanford, 1.0 mile north of the junction of Kentucky Highways 1948 and 1781, about 100 feet east of Kentucky Highway 1948; USGS Woodstock topographic quadrangle; lat. 37 degrees 21 minutes 26 seconds N. and long. 84 degrees 35 minutes 33 seconds W.

Ap—0 to 8 inches; brown (10YR 4/3) gravelly silt loam; weak fine granular structure; friable; many fine roots; about 20 percent limestone gravel; neutral; abrupt smooth boundary.

Bt1—8 to 16 inches; yellowish brown (10YR 5/6) gravelly silt loam; moderate medium subangular blocky structure; firm; common fine roots; few faint clay films on faces of peds; about 20 percent limestone and siltstone gravel; moderately acid; clear smooth boundary.

Bt2—16 to 30 inches; strong brown (7.5YR 5/8) gravelly silt loam; moderate medium subangular blocky structure; firm; few fine roots; common distinct clay films on faces of peds; about 25 percent limestone and siltstone gravel; strongly acid; gradual smooth boundary.

Bt3—30 to 40 inches; strong brown (7.5YR 5/6) gravelly silty clay loam; moderate medium subangular blocky structure; firm; common distinct clay films on faces of peds; about 15 percent limestone and siltstone gravel; very strongly acid; gradual smooth boundary.

BC—40 to 44 inches; variegated strong brown (7.5YR 5/6) and red (2.5YR 4/8) gravelly silty clay loam; weak medium subangular blocky structure; very firm; about 25 percent limestone and siltstone gravel; very strongly acid; clear smooth boundary.

R—44 inches; hard siltstone.

Depth to bedrock is more than 40 inches. Reaction ranges from very strongly acid to moderately acid, unless the soil is limed. The content of rock fragments ranges from 0 to 25 percent in the Ap horizon and from 0 to 40 percent in the Bt horizon.

The Ap horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 or 3. Texture of the fine-earth fraction is silt loam.

The Bt horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 6 to 8. Texture of the fine-earth fraction is silty clay loam or silt loam.

The BC horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 4 to 8. Texture of the fine-earth fraction is silt loam or silty clay loam.

Garlin Series

The Garlin series consists of shallow, well drained, moderately permeable soils. These soils formed in residuum weathered from interbedded calcareous siltstone, calcareous sandstone, shale, and limestone. They are on narrow ridgetops and side slopes in the uplands, mainly in the eastern part of the survey area. Slopes range from 6 to 50 percent. Garlin soils are fine-loamy, carbonatic, mesic Rendollic Eutrochrepts.

Garlin soils are associated on the landscape with Beasley, Cynthiana, Faywood, and Shrouts soils. The associated soils have an argillic horizon. Beasley soils are underlain by bedrock at a depth of more than 40 inches. Faywood and Shrouts soils are underlain by bedrock at a depth of 20 to 40 inches. Beasley, Faywood, and Shrouts soils are in a fine textured family. Cynthiana soils are in a clayey family.

Typical pedon of Garlin loam in an area of Garlin-Shrouts complex, 12 to 25 percent slopes, eroded, rocky; about 3.6 miles southeast of Lancaster; 1,600 feet southwest of Kentucky Highway 39 at Gilberts Creek Church, 150 feet northeast of a pond; USGS Lancaster topographic quadrangle; lat. 37 degrees 33 minutes 55 seconds N. and long. 84 degrees 33 minutes 6 seconds W.

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) loam; weak fine granular structure; very friable; common fine roots throughout the horizon; slightly effervescent; slightly alkaline; abrupt smooth boundary.

Bw—7 to 18 inches; light yellowish brown (2.5Y 6/4) loam; moderate medium subangular blocky structure; friable; few fine roots; strongly effervescent; moderately alkaline; abrupt wavy boundary.

Cr—18 to 23 inches; weathered calcareous siltstone; strongly effervescent.

R—23 inches; hard siltstone.

Depth to soft bedrock ranges from 12 to 20 inches. Reaction ranges from neutral to moderately alkaline. The content of rock fragments ranges from 0 to 10 percent in the Ap horizon and from 0 to 20 percent in the Bw horizon.

The Ap horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 to 4. Texture is loam.

The Bw horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 2 to 6. In some pedons, it is variegated in shades of brown, olive, and gray. Low chroma colors, where present, are inherited from the parent rock. Texture of the fine-earth fraction is loam, silt loam, or sandy clay.

Some pedons have a thin C or Cr horizon. This horizon has hue of 5Y, 5GY, or 10GY, value of 5 or 6, and chroma of 2 or less. It has few to many yellowish brown and light olive brown variegated mottles.

Garmon Series

The Garmon series consists of moderately deep, well drained, moderately permeable soils. These soils formed in residuum weathered from siltstone, limestone, and calcareous shale. They are on side slopes, mainly in the Pennyroyal and Knobs regions of the survey area. Slopes range from 25 to 80 percent. Garmon soils are fine-loamy, mixed, mesic Dystric Eutrochrepts.

Garmon soils are associated on the landscape with Carpenter, Christian, Frankstown, and Lenberg soils. Carpenter, Christian, and Frankstown soils have bedrock at a depth of more than 40 inches. Christian soils are in a clayey family. Lenberg soils are underlain by soft bedrock and are in a fine textured family.

Typical pedon of Garmon channery silt loam, 25 to 80 percent slopes, rocky; about 3 miles southeast of Stanford, 1,000 feet west of Miracle, 50 feet east of a farm lane; USGS Halls Gap topographic quadrangle; lat. 37 degrees 27 minutes 51 seconds N. and long. 84 degrees 41 minutes 12 seconds W.

O—1 inch to 0; partially decomposed leaf litter.

A—0 to 3 inches; brown (10YR 4/3) channery silt loam; weak fine granular structure; friable; many fine roots; about 15 percent siltstone channers; neutral; abrupt smooth boundary.

Bw1—3 to 15 inches; yellowish brown (10YR 5/4) channery silt loam; moderate medium subangular blocky structure; friable; common fine roots; about 20 percent siltstone channers; slightly acid; gradual smooth boundary.

Bw2—15 to 26 inches; light yellowish brown (10YR 6/4) channery silt loam; moderate medium subangular blocky structure; friable; about 30 percent siltstone channers; neutral; abrupt smooth boundary.

R—26 inches; hard siltstone.

Depth to bedrock ranges from 20 to 40 inches. Reaction ranges from very strongly acid to neutral. The content of shale, siltstone, or limestone rock fragments ranges from 2 to 45 percent throughout the profile.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4. Texture of the fine-earth fraction is silt loam.

The Bw horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8. Texture of the fine-earth fraction is loam, silt loam, or silty clay loam.

Gilpin Series

The Gilpin series consists of moderately deep, well drained, moderately permeable soils. These soils formed in residuum weathered from siltstone and shale. They are on ridgetops in the uplands, mainly in the eastern part of the Knobs region of the survey area. Slopes range from 2 to 12 percent. Gilpin soils are fine-loamy, mixed, mesic Typic Hapludults.

Gilpin soils are associated on the landscape with Carpenter, Christian, Frankstown, Garmon, and Lenberg soils. Carpenter, Christian, and Frankstown soils have bedrock at a depth of more than 40 inches. Christian soils are in a clayey family. Carpenter, Garmon, and Lenberg soils are on the lower side slopes. Garmon soils do not have an argillic horizon. Lenberg soils are underlain by soft bedrock and are in a clayey family.

Typical pedon of Gilpin silt loam, 6 to 12 percent slopes, eroded; about 2 miles northeast of Crab Orchard, 4,000 feet west of the Lincoln-Rockcastle County line, 40 feet south of Old Fall Lick Road; USGS Brodhead topographic quadrangle; lat. 37 degrees 29 minutes 25 seconds N. and long. 84 degrees 31 minutes 14 seconds W.

Ap—0 to 4 inches; yellowish brown (10YR 5/4) silt loam; weak medium granular structure; friable; common fine roots; 5 percent channers; moderately acid; abrupt smooth boundary.

Bt1—4 to 14 inches; yellowish brown (10YR 5/6) channery silt loam; moderate medium subangular blocky structure; friable; common fine roots; few distinct clay films on faces of peds; about 15 percent channers; strongly acid; clear smooth boundary.

Bt2—14 to 25 inches; strong brown (7.5YR 5/6) channery silty clay loam; moderate medium subangular blocky structure; firm; few fine roots; few distinct clay films on faces of peds; about 20 percent channers; strongly acid; clear smooth boundary.

C—25 to 32 inches; yellowish brown (10YR 5/6) very channery silty clay loam; massive; very firm; about 35 percent channers; strongly acid; abrupt smooth boundary.

R—32 inches; hard siltstone.

Depth to bedrock ranges from 20 to 40 inches. Reaction ranges from extremely acid to strongly acid, unless the soil is limed. The content of rock fragments ranges from 5 to 40 percent in the A and Bt horizons and from 30 to 90 percent in the C horizon.

The Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 2 to 4. Texture of the fine-earth fraction is silt loam.

The Bt horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 8. Texture of the fine-earth fraction is silt loam or silty clay loam.

The C horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 2 to 6. Texture of the fine-earth fraction is silt loam, loam, or silty clay loam.

Greenbriar Series

The Greenbriar series consists of deep and very deep, well drained, moderately permeable soils. These soils formed in a silty mantle over residuum weathered from acid shales and siltstones. They are on ridgetops, mainly in the Knobs region of the survey area. Slopes range from 2 to 6 percent. Greenbriar soils are fine-silty, mixed, mesic Typic Hapludults.

Greenbriar soils are associated on the landscape with Berea, Crider, Jessietown, Johnsburg, Mullins, Trappist, and Tilsit soils. Berea soils have bedrock at a depth of 20 to 40 inches and are moderately well drained. Crider soils are on the lower ridgetops and have a solum more than 60 inches thick. Jessietown soils have bedrock at a depth of 20 to 40 inches. Johnsburg, Mullins, and Tilsit soils have a fragipan. Johnsburg soils are somewhat poorly drained. Mullins soils are poorly drained. Tilsit soils are moderately well drained. Trappist soils have bedrock at a depth of 20 to 40 inches and belong to a clayey family.

Typical pedon of Greenbriar silt loam, 2 to 6 percent slopes; about 3.8 miles south of Stanford, 150 feet east of U.S. Highway 27; USGS Halls Gap topographic quadrangle; lat. 37 degrees 29 minutes 25 seconds N. and long. 84 degrees 31 minutes 14 seconds W.

Ap—0 to 10 inches; brown (10YR 4/3) silt loam; moderate fine and medium granular structure; friable; common fine and medium roots; neutral; abrupt smooth boundary.

Bt1—10 to 15 inches; yellowish brown (10YR 5/6) silt loam; moderate medium subangular blocky structure; firm; few fine roots; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt2—15 to 26 inches; yellowish brown (10YR 5/6) silt loam; common medium faint strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm; few fine roots; common faint clay films on faces of peds; common fine black manganese concretions; 2 percent shale

channers; very strongly acid; gradual wavy boundary.

Bt3—26 to 41 inches; yellowish brown (10YR 5/6) silty clay loam; common medium distinct light yellowish brown (10YR 6/4) and pale brown (10YR 6/3) mottles; moderate medium subangular blocky structure parting to weak fine angular; firm; few fine roots; common distinct clay films on faces of peds; few fine black manganese concretions; 5 percent shale channers; very strongly acid; clear wavy boundary.

Bt4—41 to 48 inches; brownish yellow (10YR 6/6) silty clay loam; common medium prominent light brownish gray (10YR 6/2) and common medium distinct yellowish brown (10YR 5/8) mottles; moderate fine and medium angular blocky structure; firm; common distinct clay films on faces of peds; few fine black manganese concretions; 5 percent shale channers; very strongly acid; abrupt wavy boundary.

R—48 inches; hard black (N 2/0) shale.

Depth to bedrock ranges from 40 to 72 inches. Reaction ranges from extremely acid to strongly acid, unless the soil is limed. The content of rock fragments ranges from 0 to 15 percent in the A and Bt horizons and from 0 to 35 percent in the BC and C horizons.

The Ap horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 2 to 4. Texture is silt loam.

The Bt horizon has hue of 5YR to 10YR, value of 4 to 6, and chroma of 4 to 8. In some pedons, the horizon is mottled in shades of brown, yellow, or red and has shades of gray in the lower part. Texture is silt loam or silty clay loam.

Some pedons have a C horizon. This horizon has colors similar to those of the Bt horizon. Texture of the fine-earth fraction is silty clay loam or silty clay.

Hagerstown Series

The Hagerstown series consists of deep and very deep, well drained, moderately slowly permeable and slowly permeable soils. These soils formed in residuum weathered from limestone. They are on ridgetops and upper side slopes in the uplands, mainly in the Outer Bluegrass region of the survey area. Slopes range from 6 to 12 percent. Hagerstown soils are fine, mixed, mesic Typic Hapludalfs.

Hagerstown soils are associated on the landscape with Beasley, Crider, Faywood, Lowell, and Shrouts soils. Beasley, Faywood, and Shrouts soils have a solum that is less than 40 inches thick. Crider soils are in a fine-silty textured family. Faywood soils have bedrock at a depth of 20 to 40 inches. Lowell soils have a Bt horizon no redder than hue 7.5YR. Shrouts soils have soft bedrock at a depth of 20 to 40 inches.

Typical pedon of Hagerstown silt loam, 6 to 12 percent slopes; about 3 miles east of Stanford, 0.3 mile south of Kentucky Highway 150, about 600 feet west of Will Chancellor Road; USGS Crab Orchard topographic quadrangle; lat. 37 degrees 29 minutes 29 seconds N. and long. 84 degrees 34 minutes 26 seconds W.

Ap—0 to 7 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine granular structure; friable; common fine roots; neutral; clear smooth boundary.

Bt1—7 to 12 inches; strong brown (7.5YR 5/6) silty clay loam; moderate medium subangular blocky structure; firm; few fine roots; few faint clay films on faces of peds; moderately acid; gradual smooth boundary.

Bt2—12 to 26 inches; red (2.5YR 5/6) silty clay; moderate medium angular blocky structure; firm; common distinct clay films on faces of peds; few fine black manganese concretions; 5 percent chert gravel; strongly acid; clear smooth boundary.

Bt3—26 to 40 inches; red (2.5YR 4/6) silty clay; moderate medium angular blocky structure; very firm; common distinct clay films on faces of peds; 10 percent chert gravel; strongly acid; clear smooth boundary.

Bt4—40 to 65 inches; red (2.5YR 4/6) clay; moderate medium angular blocky structure; very firm; few distinct clay films on faces of peds; 10 percent chert gravel; strongly acid.

Depth to bedrock ranges from 40 to 84 inches or more. Reaction is very strongly acid or strongly acid, unless the soil is limed. The content of rock fragments ranges from 0 to 15 percent throughout the profile.

The A horizon has hue of 10YR to 5YR, value of 3 to 5, and chroma of 2 to 4. Texture is silt loam.

The Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 4 to 8. Texture is silty clay loam, silty clay, or clay.

Jessietown Series

The Jessietown series consists of moderately deep, well drained, moderately permeable soils. These soils formed in a thin, loamy mantle over material weathered from black fissile shale. They are on ridgetops and toeslopes in the uplands, mainly in the Knobs region of the survey area. Slopes range from 2 to 12 percent. Jessietown soils are fine-silty, mixed, mesic Typic Hapludults.

Jessietown soils are associated on the landscape with Berea, Greenbriar, Johnsburg, Mullins, Tilsit, and Trappist soils. Berea soils are moderately well drained. Greenbriar, Johnsburg, Mullins, and Tilsit soils have bedrock at a depth of more than 40 inches. Johnsburg soils are somewhat poorly drained and have a fragipan. Mullins soils are poorly drained and have a fragipan. Trappist soils belong to a clayey textured family. Tilsit soils are moderately well drained and have a fragipan.

Typical pedon of Jessietown silt loam, 2 to 6 percent slopes; about 2 miles south of McKinney, 0.35 mile north of Meetinghouse Knob, about 600 feet west of Kentucky Highway 196; USGS Hustonville topographic quadrangle; lat. 37 degrees 25 minutes 31 seconds N. and long. 84 degrees 47 minutes 10 seconds W.

Ap—0 to 8 inches; brown (10YR 4/3) silt loam; weak fine granular structure; friable; few fine roots; slightly acid; abrupt smooth boundary.

Bt1—8 to 16 inches; dark yellowish brown (10YR 4/6) silty clay loam; moderate medium subangular blocky structure; firm; few fine roots; few distinct clay films on faces of peds; strongly acid; clear smooth boundary.

Bt2—16 to 22 inches; yellowish brown (10YR 5/6) channery silty clay loam; moderate medium subangular blocky structure; firm; few faint clay films on faces of peds; 15 percent shale channers; very strongly acid; abrupt smooth boundary.

R—22 inches; hard black shale.

Depth to hard bedrock ranges from 20 to 40 inches. Reaction ranges from extremely acid to strongly acid, unless the soil is limed. The content of rock fragments ranges from 0 to 5 percent in the Ap horizon and from 0 to 35 percent in the Bt horizon.

The Ap horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 2 to 4. Texture is silt loam.

The Bt horizon has hue of 5YR to 10YR, value of 4 to 6, and chroma of 4 to 8. In some pedons, the horizon has few or common mottles in shades of brown, yellow, or red and has shades of gray in the lower part. Texture of the fine-earth fraction is silt loam or silty clay loam.

Some pedons have a C horizon. This horizon has colors similar to those of the Bt horizon. Texture of the fine-earth fraction is silt loam or silty clay loam.

Johnsburg Series

The Johnsburg series consists of deep and very deep, somewhat poorly drained soils that have a fragipan in the subsoil. These soils formed in a silty mantle over material weathered from sandstone, siltstone, and shale. They are in low areas in the uplands. Slopes range from 0 to 2 percent. Johnsburg soils are fine-silty, mixed, mesic Aquic Fragiudults.

Johnsburg soils are associated on the landscape with Berea, Greenbriar, Jessietown, Mullins, Robertsville, Teddy, Tilsit, and Trappist soils. Berea, Greenbriar, Jessietown, and Trappist soils do not have a fragipan. Berea soils are moderately deep and moderately well drained. Greenbriar soils are well drained. Jessietown and Trappist soils are moderately deep and well drained. Mullins soils are poorly drained. Tilsit and Teddy soils are moderately well drained.

Typical pedon of Johnsburg silt loam in an area of Johnsburg-Mullins complex; about 4 miles west of Hustonville, 1 mile north of Kentucky Highway 78, about 750 feet west of Carrier Road; USGS Hustonville topographic quadrangle; lat. 37 degrees 29 minutes 29 seconds N. and long. 84 degrees 51 minutes 24 seconds W.

Ap—0 to 6 inches; brown (10YR 5/3) silt loam; weak fine granular structure; friable; many fine roots; moderately acid; abrupt smooth boundary.

BA—6 to 11 inches; yellowish brown (10YR 5/6) silt loam; weak fine subangular blocky structure; friable; few fine roots; strongly acid; gradual smooth boundary.

Bt—11 to 24 inches; pale brown (10YR 6/3) silty clay loam; moderate medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; few soft brown manganese nodules; common medium distinct light brownish gray (2.5YR 6/2) and gray (10YR 6/1) iron depletions; very strongly acid; gradual smooth boundary.

Btx1—24 to 36 inches; pale brown (10YR 6/3) silty clay loam; moderate very coarse prismatic structure parting to moderate medium angular blocky; firm; few faint clay films on faces of peds; few soft black and brown manganese nodules; many fine distinct light gray (10YR 7/1) iron depletions; brittle in 75 percent of the mass; very strongly acid; gradual smooth boundary.

Btx2—36 to 48 inches; light brownish gray (10YR 6/2) silty clay loam; moderate very coarse prismatic structure parting to moderate medium subangular blocky; firm; few faint clay films between prisms and on faces of peds; common medium prominent brownish yellow (10YR 6/8) and strong brown (7.5YR 5/6) iron concentrations; 5 percent channers; brittle in 75 percent of the mass; very strongly acid; abrupt smooth boundary.

R—48 inches; hard fissile shale.

Depth to bedrock ranges from 48 to 84 inches. The depth to the fragipan ranges from 24 to 36 inches. Reaction ranges from extremely acid to strongly acid, unless the soil is limed.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. Texture is silt loam.

The BA horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 3 to 6. Texture is silt loam.

The Bt horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 3 to 6. The horizon has few to many iron depletions in shades of gray and brown. Texture is silt loam or silty clay loam.

The Btx horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 2 to 8. The horizon has common or many redoximorphic iron concentrations and depletions in shades of gray and brown. Texture is silt loam or silty clay loam.

Lawrence Series

The Lawrence series consists of very deep, somewhat poorly drained soils that have a fragipan in the subsoil. These soils formed in mixed alluvium. They are on stream terraces and in low areas on uplands. Slopes range from 0 to 2 percent. Lawrence soils are fine-silty, mixed, mesic Aquic Fragiudalfs.

Lawrence soils are associated on the landscape with Elk, Melvin, Newark, Nicholson, Teddy, and Robertsville soils. Elk soils are on the slightly higher stream terraces and are well drained. Newark and Melvin soils are on adjoining flood plains. Newark soils do not have a fragipan. Melvin and Robertsville soils are poorly drained. Nicholson and Teddy soils are on adjacent ridgetops in the uplands and are moderately well drained.

Typical pedon of Lawrence silt loam in an area of Lawrence-Robertsville complex; about 5 miles south of Stanford, 0.5 mile east of Kentucky Highway 643, about 100 feet south of a farm lane; USGS Crab Orchard topographic quadrangle; lat. 37 degrees 26 minutes 27 seconds N. and long. 84 degrees 36 minutes 28 seconds W.

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) silt loam; moderate medium granular structure; friable; common fine roots; moderately acid; clear smooth boundary.

Bt1—7 to 14 inches; yellowish brown (10YR 5/4) silt loam; moderate medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; few medium faint pale brown (10YR 6/3) iron depletions; moderately acid; clear smooth boundary.

Bt2—14 to 24 inches; yellowish brown (10YR 5/4) silty clay loam; moderate medium subangular blocky structure; firm; few fine roots; few distinct clay films on faces of peds; common medium prominent brownish yellow (10YR 6/8) iron concentrations and common medium distinct light gray (10YR 7/2) iron depletions; strongly acid; clear smooth boundary.

Btx—24 to 45 inches; yellowish brown (10YR 5/4) silty clay loam; weak very coarse prismatic structure parting to moderate medium subangular blocky; very firm; few fine roots between prisms; few distinct clay films on faces of peds; common silt coats between peds; common medium distinct light brownish gray (10YR 6/2) iron depletions; brittle in 75 percent of the mass; very strongly acid; clear smooth boundary.

C—45 to 65 inches; brown (10YR 5/3) silty clay loam; very firm; massive; many medium distinct light brownish gray (10YR 6/2) iron depletions; very strongly acid.

Depth to bedrock is more than 60 inches. The depth to the fragipan ranges from 18 to 32 inches. Reaction ranges from very strongly acid to slightly acid above and in the fragipan, unless the soil is limed. It ranges from very strongly acid to neutral below the fragipan.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4. Texture is silt loam.

The Bt horizon has hue of 10YR to 2.5Y, value of 5 or 6, and chroma of 3 to 6. The horizon has few to many redoximorphic iron depletions in shades of gray. Texture is silt loam or silty clay loam.

The Btx horizon has hue of 7.5YR to 10YR, value of 4 to 6, and chroma of 1 to 8, or it is neutral in hue and has value of 5 to 7. The horizon has few to many iron concentrations and depletions in shades of gray and brown. Texture is silt loam or silty clay loam.

The C horizon has hue of 5YR to 5Y, value of 4 to 6, and chroma of 1 to 8, or it is neutral in hue and has value of 5 to 7. The horizon has few to many iron concentrations and depletions in shades of gray and brown. Texture is silt loam or silty clay loam.

Lenberg Series

The Lenberg series consists of moderately deep, well drained, moderately slowly permeable soils. These soils formed in fine textured residuum of shale. They are on lower side slopes, footslopes, and ridgetops, mainly in the Knobs region of the survey area. Slopes range from 6 to 30 percent. Lenberg soils are fine, mixed, mesic Ultic Hapludalfs.

Lenberg soils are associated on the landscape with Carpenter, Garmon, Colyer, and Trappist soils. Carpenter soils are on side slopes and footslopes

adjacent to the Lenberg soils and have bedrock at a depth of more than 40 inches. Carpenter and Garmon soils are in a fine-loamy family. Colyer soils are on side slopes and footslopes below the Lenberg soils. Colyer soils are in a clayey-skeletal family and have hard black shale bedrock at a depth of 10 to 20 inches. Garmon soils are on upper side slopes and narrow ridgetops above the Lenberg soils and have hard bedrock at a depth of 20 to 40 inches. Trappist soils are on side slopes and ridges below the Lenberg soils. They are in a clayey family and have hard black shale bedrock at a depth of 20 to 40 inches.

Typical pedon of Lenberg silt loam in an area of Carpenter-Lenberg complex, 12 to 30 percent slopes, eroded; about 11.5 miles southeast of Lancaster, 950 feet west of Hamilton Valley Road, 150 feet southwest of a cemetery; USGS Paint Lick topographic quadrangle; lat. 37 degrees 31 minutes 41 seconds N. and long. 84 degrees 26 minutes 28 seconds W.

Oe—1 inch to 0; partially decomposed leaf litter.

A—0 to 5 inches; brown (10YR 4/3) silt loam; weak medium granular structure; friable; common fine and medium roots; 8 percent channers; very strongly acid; abrupt smooth boundary.

Bt1—5 to 14 inches; yellowish brown (10YR 5/6) silty clay loam; few fine distinct strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; firm; common fine roots; common distinct clay films on faces of peds; 5 percent channers; very strongly acid; clear wavy boundary.

Bt2—14 to 20 inches; strong brown (7.5YR 5/6) silty clay; common medium prominent light brownish gray (2.5Y 6/2) and few fine distinct yellowish red (5YR 5/8) mottles; strong medium subangular blocky structure parting to strong fine subangular blocky; firm; few fine roots; common distinct clay films on faces of peds; 5 percent channers; very strongly acid; clear wavy boundary.

Bt3—20 to 30 inches; olive gray (5Y 5/2) silty clay; common medium prominent yellowish red (5YR 5/6) mottles; moderate medium subangular blocky structure; very firm; few fine roots throughout the horizon; common distinct clay films on faces of peds; 5 percent channers; very strongly acid; gradual wavy boundary.

BC—30 to 39 inches; olive gray (5Y 5/2) channery silty clay; few medium prominent yellowish red (5YR 5/6) and many medium prominent strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure parting to weak fine subangular blocky; very firm; few fine roots; 30 percent channers; very strongly acid; clear wavy boundary.

Cr—39 to 55 inches; variegated olive (5Y 6/3), light olive gray (5Y 6/2), and strong brown (7.5YR 5/8) weathered shale bedrock; extremely acid.

Depth to shale bedrock ranges from 20 to 40 inches. Reaction is very strongly acid or strongly acid, unless the soil is limed. The content of fragments of shale, limestone, or siltstone ranges from 6 to 30 percent, by volume, in the A and Bt horizons and from 25 to 45 percent in the C horizon.

The A or Ap horizon has hue of 10YR or 7.5YR, value of 3 to 5, and chroma of 2 to 6. Texture of the fine-earth fraction is silt loam.

Some pedons have a BA horizon. This horizon has colors and textures similar to those of the Ap horizon.

The Bt horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 8. It has few to many mottles in shades of brown, red, yellow, and gray in the lower part. The gray colors are derived from the parent material. Texture of the fine-earth fraction is silty clay or silty clay loam.

The BC horizon has colors in shades of brown, yellow, olive, or gray. Low chroma colors are derived from the parent material. Texture of the fine-earth fraction is silty clay or clay.

Some pedons have a C horizon. This horizon has colors and textures similar to those of the BC horizon.

Lily Series

The Lily series consists of moderately deep, well drained, moderately rapidly permeable soils. These soils formed in material weathered from sandstone. They are on ridgetops in the uplands, mainly in the Pennyroyal region of the survey area. Slopes range from 2 to 12 percent. Lily soils are fine-loamy, siliceous, mesic Typic Hapludults.

Lily soils are associated on the landscape with Christian, Frankstown, Pricetown, and Teddy soils. The associated soils have bedrock at a depth of more than 40 inches. Christian soils are in a clayey family. Pricetown soils are in a fine-silty family. Teddy soils are moderately well drained and have a fragipan.

Typical pedon of Lily loam, 2 to 6 percent slopes; about 8.5 miles south of Crab Orchard, 1.5 miles east of Kentucky Highway 39, about 100 feet north of Flatwoods School Road, 50 feet west of a farm lane; USGS Woodstock topographic quadrangle; lat. 37 degrees 21 minutes 5 seconds N. and long. 84 degrees 31 minutes 44 seconds W.

Ap—0 to 6 inches; brown (10YR 4/3) loam; weak fine granular structure; friable; common fine roots; strongly acid; abrupt smooth boundary.

Bt1—6 to 14 inches; strong brown (7.5YR 5/6) loam;

moderate medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; strongly acid; clear wavy boundary.

Bt2—14 to 36 inches; strong brown (7.5YR 5/6) clay loam; moderate medium subangular blocky structure; friable; common distinct clay films on faces of peds; very strongly acid; clear wavy boundary.

Cr—36 to 39 inches; brown (7.5YR 5/4) weathered sandstone; abrupt wavy boundary.

R—39 inches; hard sandstone.

Depth to sandstone bedrock ranges from 20 to 40 inches. Reaction ranges from extremely acid to strongly acid, unless the soil is limed. The content of fragments of sandstone ranges from 0 to 10 percent in the Ap horizon and the upper part of the Bt horizon and from 0 to 30 percent in the lower part of the Bt horizon.

The Ap horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 2 to 4. Texture is loam.

The Bt horizon has hue of 5YR to 10YR, value of 4 to 6, and chroma of 4 to 8. In some pedons, it has mottles in shades of red, brown, or yellow. Texture is fine sandy loam, loam, sandy clay loam, or clay loam.

Lowell Series

The Lowell series consists of deep, well drained, moderately slowly permeable soils. These soils formed in residuum of limestone and mudstone interbedded with thin layers of shale. They are on ridgetops and side slopes on uplands, mainly in the Inner Bluegrass, Outer Bluegrass, and Hills of the Bluegrass regions of the survey area. Slopes range from 2 to 25 percent. Lowell soils are fine, mixed, mesic Typic Hapludalfs.

Lowell soils are associated on the landscape with Beasley, Chenault, Culleoka, Cynthiana, Eden, Faywood, Nicholson, and Sandview soils. Beasley soils have argillic horizons less than 20 inches thick and are underlain by soft bedrock. Chenault and Culleoka soils are in a fine-loamy family. Culleoka soils have bedrock at a depth of 20 to 40 inches. Cynthiana soils have bedrock at a depth of 10 to 20 inches. Eden soils are on the lower side slopes and have soft bedrock at a depth of 20 to 40 inches. Faywood soils have bedrock at a depth of 20 to 40 inches. Nicholson soils are on broad ridgetops, are moderately well drained, and are in a fine-silty family. Sandview soils are on broad ridgetops, have bedrock at a depth of more than 60 inches, and are in a fine-silty family.

Typical pedon of Lowell silt loam, 2 to 6 percent slopes; about 4 miles northeast of Lancaster, 0.25 mile west of Kentucky Highway 39, about 200 feet northeast of a farmstead; USGS Lancaster topographic quadrangle; lat. 37 degrees 38 minutes 25 seconds N. and long. 84 degrees 36 minutes 25 seconds W.

Ap—0 to 6 inches; brown (10YR 4/3) silt loam; moderate fine granular structure; friable; common fine roots; slightly acid; clear smooth boundary.

Bt1—6 to 18 inches; dark yellowish brown (10YR 4/6) silty clay; moderate medium subangular blocky structure; firm; few fine roots; few distinct clay films on faces of peds; few black manganese concretions; moderately acid; clear smooth boundary.

Bt2—18 to 42 inches; strong brown (7.5YR 5/6) clay; moderate medium angular blocky structure; very firm; few fine roots; common distinct strong brown (7.5YR 4/6) clay films; common black manganese concretions; neutral; gradual smooth boundary.

BC—42 to 52 inches; dark yellowish brown (10YR 4/6) clay; few fine distinct light yellowish brown (2.5Y 6/4) mottles; weak coarse subangular blocky structure parting to weak medium subangular blocky; very firm; neutral; abrupt smooth boundary.

R—52 inches; limestone bedrock.

Depth to bedrock is more than 40 inches. Reaction ranges from very strongly acid to slightly acid, unless the soil is limed. The content of rock fragments ranges form 0 to 5 percent in the Ap and Bt horizons and from 0 to 15 percent in the BC horizon.

The Ap horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 to 4. Texture is silt loam.

The Bt horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8. In some pedons, the horizon has mottles in shades of brown, red, olive, and gray in the lower part. Texture is silty clay loam, silty clay, or clay.

The BC horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 4 to 8. It has few or common mottles in shades of brown, olive, or gray. Texture of the fine-earth fraction is silty clay or clay.

Melvin Series

The Melvin series consists of very deep, poorly drained, moderately permeable soils. These soils formed in mixed alluvium. They are on flood plains throughout the survey area. Slopes range from 0 to 2 percent. Melvin soils are fine-silty, mixed, nonacid, mesic Typic Fluvaquents.

Melvin soils are associated on the landscape with Lawrence, Nolin, Newark, and Robertsville soils. Lawrence and Robertsville soils have a fragipan and are on the higher terraces adjacent to the

Melvin soils. Lawrence and Newark soils are somewhat poorly drained. Nolin soils are well drained.

Typical pedon of Melvin silt loam, frequently flooded; in a field about 6 miles southwest of Stanford, 900 feet south of Kentucky Highway 698, about 150 feet north of the Green River, 50 feet west of a farm lane; USGS Halls Gap topographic quadrangle; lat. 37 degrees 26 minutes 27 seconds N. and long. 84 degrees 42 minutes 51 seconds W.

Ap—0 to 8 inches; brown (10YR 4/3) silt loam; weak fine granular structure; friable; common fine roots; moderately acid; abrupt smooth boundary.

Bg—8 to 22 inches; light gray (2.5Y 7/2) silt loam; moderate medium subangular blocky structure; friable; few fine roots; common medium prominent strong brown (7.5Y 5/8) iron concentrations; moderately acid; gradual smooth boundary.

Cg1—22 to 34 inches; light gray (2.5Y 7/2) silt loam; massive; firm; common medium prominent yellowish brown (10YR 5/8) iron concentrations; slightly acid; gradual smooth boundary.

Cg2—34 to 65 inches; light gray (2.5Y 7/2) silt loam; massive; firm; common fine black manganese concretions; many medium prominent yellowish brown (10YR 5/8) and yellowish red (5YR 5/8) iron concentrations; slightly acid.

Depth to bedrock is more than 60 inches. Reaction ranges from moderately acid to slightly alkaline throughout the profile.

The Ap or A horizon has hue of 10YR to 5Y, value of 4 to 7, and chroma of 1 to 3. Texture is silt loam.

The Bg horizon has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 2 or less, or it is neutral in hue and has value of 4 to 7. The horizon has few or common iron concentrations in shades of brown and red. Texture is silt loam or silty clay loam.

The Cg horizon has colors similar to those of the Bg horizon. Texture is silt loam or silty clay loam.

Monongahela Series

The Monongahela series consists of very deep, moderately well drained soils that have a fragipan in the subsoil. These soils formed in mixed alluvium. They are on stream terraces along the Kentucky River. Slopes range from 2 to 6 percent. Monongahela soils are fine-loamy, mixed, mesic Typic Fragiudults.

Monongahela soils are associated on the landscape with Allegheny, Elk, Nolin, and Otwell soils. Allegheny, Elk, and Nolin soils are well drained. Elk, Nolin, and Otwell soils are in a fine-silty family. Nolin soils are on adjacent flood plains.

Typical pedon of Monongahela loam, 2 to 6 percent slopes; about 11 miles north of Lancaster, 1,000 feet north of the end of Mt. Hebron Road, 200 feet west of the Kentucky River; USGS Buckeye topographic quadrangle; lat. 37 degrees 45 minutes 08 seconds N. and long. 84 degrees 42 minutes 13 seconds W.

Ap—0 to 9 inches; brown (10YR 4/3) loam; moderate medium granular structure; friable; common fine roots; neutral; clear smooth boundary.

Bt—9 to 18 inches; yellowish brown (10YR 5/4) loam; moderate medium subangular blocky structure; firm; few fine roots; few distinct clay films on faces of peds; common fine distinct light yellowish brown (2.5Y 6/4) iron depletions; moderately acid; clear smooth boundary.

Btx1—18 to 34 inches; yellowish brown (10YR 5/4) loam; moderate very coarse prismatic structure parting to weak medium subangular blocky; very firm; few very fine roots between prisms; common distinct clay films on prism faces; common medium distinct light brownish gray (2.5Y 6/2) iron depletions; brittle in 75 percent of the mass; strongly acid; gradual smooth boundary.

Btx2—34 to 50 inches; yellowish brown (10YR 5/4) loam; moderate very coarse prismatic structure parting to moderate medium subangular blocky; very firm; common distinct clay films on prism faces; common medium and coarse distinct light brownish gray (2.5Y 6/2) iron depletions; brittle in 75 percent of the mass; strongly acid; gradual smooth boundary.

BC—50 to 65 inches; yellowish brown (10YR 5/4) loam; weak medium subangular blocky structure; firm; common medium distinct light brownish gray (2.5Y 6/2) iron depletions; very strongly acid.

Depth to bedrock is more than 60 inches. The depth to the fragipan ranges from 18 to 30 inches. Reaction is very strongly acid or strongly acid unless the soil is limed. The content of rock fragments ranges from 0 to 15 percent in the Ap and Bt horizons and from 0 to 25 percent in the Btx and BC horizons.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. Texture is loam.

The Bt horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 to 8. Texture is silt loam, loam, clay loam, or sandy clay loam.

The Btx horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8. The horizon has common or many iron concentrations and depletions in shades of gray and brown. Texture of the fine-earth fraction is silt loam, loam, clay loam, or sandy clay loam.

The BC horizon has hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 2 to 8. It has common or many iron concentrations and depletions in shades of gray

and brown. Texture of the fine-earth fraction is loam, clay loam, or sandy clay loam.

Mullins Series

The Mullins series consists of deep, poorly drained soils that have a fragipan in the subsoil. These soils formed in material weathered from siltstone and shale. They are in low areas in the uplands, mainly in the Knobs region of the survey area. Slopes range from 0 to 2 percent. Mullins soils are fine-silty, mixed, mesic Typic Fragiaquults.

Mullins soils are associated on the landscape with Berea, Greenbriar, Jessietown, Johnsburg, Tilsit, and Trappist soils. Berea and Tilsit soils are moderately well drained. Berea and Jessietown soils have bedrock at a depth of 20 to 40 inches. Greenbriar, Jessietown, and Trappist soils are well drained. Johnsburg soils are somewhat poorly drained. Greenbriar, Jessietown, and Trappist soils are on ridgetops. Trappist soils are in a clayey family.

Typical pedon of Mullins silt loam in an area of Johnsburg-Mullins complex; about 4 miles west of Hustonville, 0.5 mile north of Kentucky Highway 78, about 75 feet west of Carter School Road; USGS Hustonville topographic quadrangle; lat. 37 degrees 29 minutes 36 seconds N. and long. 84 degrees 51 minutes 24 seconds W.

Ap—0 to 6 inches; light brownish gray (10YR 6/2) silt loam; weak fine granular structure; friable; common fine roots; few fine distinct yellowish brown (10YR 5/6) iron concentrations; moderately acid; abrupt smooth boundary.

Btg—6 to 18 inches; light gray (2.5Y 7/2) silt loam; moderate medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; common medium prominent yellowish brown (10YR 5/6) iron concentrations; strongly acid; gradual smooth boundary.

Btx1—18 to 26 inches; light gray (2.5Y 7/2) silt loam; weak very coarse prismatic structure parting to moderate fine subangular blocky; very firm; few very fine roots between prisms; few distinct clay films on faces of peds; few gray (2.5Y 6/1) silt coats between prisms; common medium prominent yellowish brown (10YR 5/6) iron concentrations; brittle in 75 percent of the mass; strongly acid; clear smooth boundary.

Btx2—26 to 38 inches; light gray (10YR 7/2) silt loam; moderate very coarse prismatic structure parting to moderate fine subangular blocky; firm; few distinct clay films on faces of peds; common medium prominent yellowish brown (10YR 5/4) iron concentrations; 5 percent shale channers; brittle in 75 percent of the mass; very strongly acid; gradual smooth boundary.

B′tg—38 to 50 inches; light gray (2.5Y 7/2) silty clay loam; moderate medium subangular blocky structure; firm; few faint clay films on faces of peds; common medium distinct yellowish brown (10YR 5/4) iron concentrations; very strongly acid; gradual smooth boundary.

Cg—50 to 55 inches; light gray (2.5YR 7/2) very channery silty clay loam; massive; very firm; common medium prominent yellowish brown (10YR 5/6) iron concentrations; 40 percent black shale channers; very strongly acid; gradual smooth boundary.

R—55 inches; black fissile shale.

Depth to hard bedrock is more than 48 inches. Depth to the fragipan ranges from 12 to 28 inches. Reaction ranges from extremely acid to strongly acid, unless the soil is limed.

The Ap horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 or 2. Most pedons have few to many iron concentrations in shades of brown. Texture is silt loam.

The Btg horizon has hue of 10YR to 5Y, value of 6 or 7, and chroma of 1 or 2. Iron concentrations and depletions are in shades of brown, yellow, and gray. Texture is silt loam or silty clay loam.

The Btx horizon has hue of 10YR to 5Y, value of 5 to 7, and chroma of 1 or 2, or it is neutral in hue and has value of 5 to 7. The horizon has few to many iron concentrations and depletions in shades of brown, yellow, and gray. Texture is silt loam or silty clay loam.

The Cg horizon has hue of 10YR to 5Y, value of 5 to 7, and chroma of 1 or 2, or it is neutral in hue and has value of 5 to 7. The horizon has few or common iron concentrations and depletions in shades of brown or yellow. In some pedons it is variegated in shades of brown, yellow, or gray with no dominant color. Texture of the fine-earth fraction is silt loam, silty clay loam, or silty clay.

Newark Series

The Newark series consists of very deep, somewhat poorly drained, moderately permeable soils. These soils formed in mixed alluvium. They are on flood plains throughout the survey area. Slopes range from 0 to 2 percent. Newark soils are fine-silty, mixed, nonacid, mesic Aeric Fluvaquents.

Newark soils are associated on the landscape with Boonesboro, Melvin, Nolin, Skidmore, and Yosemite

soils. Boonesboro, Nolin, and Skidmore soils are well drained. Boonesboro soils are in a fine-loamy family. Melvin soils are poorly drained. Skidmore and Yosemite soils are in a loamy-skeletal family.

Typical pedon of Newark silt loam, frequently flooded; about 8 miles southeast of Stanford, 300 feet west of Moccasin Creek Road, 900 feet north of the Green River; USGS Hustonville topographic quadrangle; lat. 37 degrees 24 minutes 04 seconds N. and long. 84 degrees 46 minutes 42 seconds W.

Ap—0 to 8 inches; brown (10YR 4/3) silt loam; weak medium granular structure; friable; common fine roots; neutral; abrupt smooth boundary.

Bw—8 to 16 inches; yellowish brown (10YR 5/6) silt loam; moderate medium subangular blocky structure; friable; common fine roots; few medium distinct light brownish gray (10YR 6/2) iron depletions; moderately acid; clear smooth boundary.

Bg—16 to 39 inches; grayish brown (10YR 5/2) silt loam; weak medium subangular blocky structure; friable; few fine roots; common medium faint light brownish gray (10YR 6/2) iron depletions and common medium distinct yellowish brown (10YR 5/6) iron concentrations; moderately acid; clear smooth boundary.

Cg1—39 to 50 inches; light brownish gray (10YR 6/2) silty clay loam; massive; friable; many fine and medium faint gray (10YR 6/1) iron depletions and many fine and medium distinct yellowish brown (10YR 5/6) iron concentrations; slightly acid; gradual smooth boundary.

Cg2—50 to 62 inches; light brownish gray (10YR 6/2) silty clay loam; massive; firm; common medium prominent yellowish brown (10YR 5/8) iron concentrations; slightly acid.

Depth to bedrock is more than 60 inches. Reaction ranges from moderately acid to moderately alkaline.

The Ap horizon has hue of 7.5YR or 10YR, value of 4 or 5, chroma of 2 to 4. Texture is silt loam.

The Bw horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 2 to 4. The horizon has few to many iron accumulations and depletions in shades of brown and gray. Texture is silt loam or silty clay loam.

The Bg horizon has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2, or it is neutral in hue and has value of 4 to 7. The horizon has few to many iron concentrations in shades of brown. Texture is silt loam or silty clay loam.

The Cg horizon has colors and textures similar to those of the Bg horizon.

Nicholson Series

The Nicholson series consists of very deep, moderately well drained soils that have a fragipan in the subsoil. These soils formed in a silty mantle over material weathered from limestone, calcareous shale, and siltstone. They are on broad ridgetops in the uplands, mainly in the Outer Bluegrass and Hills of the Bluegrass regions of the survey area. Slopes range from 2 to 12 percent. Nicholson soils are fine-silty, mixed, mesic Oxyaquic Fragiudalfs.

Nicholson soils are associated on the landscape with Crider, Lowell, Lawrence, and Sandview soils. Crider, Lowell, and Sandview soils are well drained and do not have a fragipan. Lowell soils are in a fine textured family. Lawrence soils are somewhat poorly drained.

Typical pedon of Nicholson silt loam, 2 to 6 percent slopes; about 5 miles east of Lancaster, 0.4 mile north of Good Hope Church, 350 feet east of Kentucky Highway 1972; USGS Paint Lick topographic quadrangle; lat. 37 degrees 33 minutes 41 seconds N. and long. 84 degrees 28 minutes 23 seconds W.

Ap—0 to 8 inches; brown (10YR 4/3) silt loam; moderate fine granular structure; very friable; common fine roots; slightly acid; clear smooth boundary.

Bt1—8 to 18 inches; dark yellowish brown (10YR 4/6) silt loam; moderate medium subangular blocky structure; friable; common fine roots; few distinct clay films on faces of peds; few fine black manganese concretions; moderately acid; clear smooth boundary.

Bt2—18 to 24 inches; yellowish brown (10YR 5/6) silt loam; moderate medium subangular blocky structure; friable; few fine roots; common distinct clay films on faces of peds; few black manganese concretions; few fine distinct pale brown (10YR 6/3) iron depletions; moderately acid; clear smooth boundary.

Btx—24 to 44 inches; yellowish brown (10YR 5/4) silty clay loam; moderate very coarse prismatic structure parting to moderate medium subangular blocky; very firm; few very fine roots between prisms; common distinct clay films on faces of prisms; common black manganese concretions and stains; common fine distinct light brownish gray (10YR 6/2) iron depletions; brittle in 75 percent of the mass; strongly acid; gradual smooth boundary.

2Bt—44 to 56 inches; yellowish brown (10YR 5/6) silty clay; moderate medium angular blocky structure; very firm; common distinct clay films on faces of

peds; common black manganese concretions and stains; common fine distinct light reddish brown (2.5YR 6/4) iron accumulations and common fine prominent light brownish gray (10YR 6/2) iron depletions; strongly acid; gradual smooth boundary.

2BC—56 to 65 inches; yellowish brown (10YR 5/6) silty clay; weak medium subangular blocky structure; very firm; common medium faint strong brown (7.5YR 5/6) and common medium distinct light reddish brown (2.5YR 6/4) iron concentrations; common medium prominent light brownish gray (10YR 6/2) iron depletions; moderately acid; abrupt smooth boundary.

R—65 inches; limestone bedrock.

Depth to bedrock is more than 60 inches. Depth to the fragipan ranges from 18 to 30 inches. Reaction ranges from very strongly acid to slightly acid, unless the soil is limed.

The Ap horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 to 4. Texture is silt loam.

The Bt horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 6. The horizon has few or common iron concentrations and depletions in shades of brown and gray. Texture is silt loam or silty clay loam.

The Btx horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 4 to 8. The horizon has few or common iron concentrations and depletions in shades of gray and brown. Texture is silt loam or silty clay loam.

The 2Bt horizon has hue of 2.5YR to 2.5Y, value of 4 or 5, and chroma of 4 to 6. The horizon has few or common iron concentrations and depletions in shades of gray and brown. Texture is silty clay loam, silty clay, or clay.

The 2BC horizon has the same colors and textures as the 2Bt horizon.

Nolin Series

The Nolin series consists of very deep, well drained, moderately permeable soils. These soils formed in mixed alluvium. They are on flood plains throughout the survey area. Slopes range from 0 to 2 percent. Nolin soils are fine-silty, mixed, mesic Dystric Fluventic Eutrochrepts.

Nolin soils are associated on the landscape with Boonesboro, Melvin, and Newark soils. Boonesboro soils are moderately deep and belong to a fine-loamy family. Newark soils are somewhat poorly drained. Melvin soils are poorly drained.

Typical pedon of Nolin silt loam, frequently flooded; about 8 miles southwest of Stanford, on Kentucky Highway 698, about 400 feet west of Moccasin Creek Road, 100 feet north of the Green River; USGS Hustonville topographic quadrangle; lat. 37 degrees 24 minutes 00 seconds N. and long. 84 degrees 46 minutes 30 seconds W.

Ap—0 to 8 inches; brown (10YR 4/3) silt loam; weak medium granular structure; very friable; common fine roots; neutral; clear smooth boundary.

Bw1—8 to 25 inches; dark yellowish brown (10YR 4/4) silt loam; moderate medium subangular blocky structure; friable; common fine roots; slightly acid; clear smooth boundary.

Bw2—25 to 46 inches; dark yellowish brown (10YR 4/4) silt loam; weak medium subangular blocky structure; very friable; few fine roots; 5 percent fine gravel; slightly acid; clear smooth boundary.

C—46 to 60 inches; dark yellowish brown (10YR 4/4) silt loam; common fine distinct pale brown (10YR 6/3) mottles; massive; friable; 10 percent fine gravel; neutral.

Depth to bedrock is more than 60 inches. Reaction ranges from moderately acid to slightly alkaline. The content of rock fragments, mostly rounded pebbles, ranges from 0 to 5 percent in A and Bw horizons and from 0 to 35 percent in the C horizon.

The Ap horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 or 3. Texture is silt loam.

The Bw horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 3 to 6. In some pedons it has few redoximorphic features in shades of gray below a depth of 36 inches. Texture is silt loam or silty clay loam.

The C horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 3 to 6. Texture of the fine-earth fraction is silt loam or silty clay loam.

Otwell Series

The Otwell series consists of very deep, moderately well drained soils that have a fragipan in the subsoil. These soils formed in mixed alluvium. They are on stream terraces throughout the survey area. Slopes range from 2 to 6 percent. Otwell soils are fine-silty, mixed, mesic Oxyaquic Fragiudalfs.

Otwell soils are associated on the landscape with Elk, Lawrence, Monongahela, and Nolin soils. Elk and Nolin soils are well drained. Lawrence soils are somewhat poorly drained. Monongahela soils belong to a fine-loamy family. Nolin soils are on adjacent flood plains.

Typical pedon of Otwell silt loam, 2 to 6 percent slopes; about 4 miles southeast of Lancaster, 500 feet

west of the Old Danville Road, 300 feet north of the Dix River; USGS Stanford topographic quadrangle; lat. 37 degrees 36 minutes 09 seconds N. and long. 84 degrees 37 minutes 56 seconds W.

Ap—0 to 7 inches; brown (10YR 4/3) silt loam; weak medium granular structure; friable; common fine roots; slightly acid; clear smooth boundary.

Bt1—7 to 12 inches; yellowish brown (10YR 5/4) silty clay loam; moderate medium subangular blocky structure; friable; common fine roots; few faint clay films on faces of peds; moderately acid; clear smooth boundary.

Bt2—12 to 22 inches; yellowish brown (10YR 5/4) silty clay loam; moderate medium subangular blocky structure; firm; few fine roots; common distinct clay films on faces of peds; few medium faint pale brown (10YR 6/3) iron depletions; strongly acid; clear wavy boundary.

Btx—22 to 46 inches; yellowish brown (10YR 5/4) silty clay loam; moderate very coarse prismatic structure parting to moderate medium subangular blocky; very firm; few very fine roots between prisms; common distinct clay films on prism faces; common medium distinct light brownish gray (10YR 6/2) iron depletions; brittle in 75 percent of the mass; very strongly acid; clear wavy boundary.

2Bt—46 to 65 inches; yellowish brown (10YR 5/6) silty clay loam; weak medium subangular blocky structure; firm; many medium prominent pinkish gray (7.5YR 6/2) iron depletions; strongly acid.

Depth to bedrock is more than 60 inches. Depth to the fragipan ranges from 18 to 30 inches. Reaction ranges from very strongly acid to moderately acid, unless the soil is limed. The content of rock fragments ranges from 0 to 5 percent in the Ap and Bt horizons and from 0 to 35 percent in the 2Bt horizon.

The Ap horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 2 to 4. Texture is silt loam.

The Bt horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 8. It has few or common iron concentrations and depletions in shades of brown, yellow, or gray. Texture is silt loam or silty clay loam.

The Btx horizon has hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 2 to 8. It has few to many iron concentrations and depletions in shades of gray and brown. Texture is silt loam, silty clay loam, or clay loam.

The 2Bt horizon has colors similar to those of the Btx horizon. Texture is silty clay loam or clay loam.

Some pedons have a 2C horizon. This horizon has colors similar to those of the Btx horizon. Texture is commonly stratified silt loam, silty clay loam, or clay loam.

Pricetown Series

The Pricetown series consists of very deep, well drained, moderately permeable soils. These soils formed in a silty mantle over residuum weathered from limestone. They are on broad ridgetops in the uplands, mainly in the Pennyroyal region of the survey area. Slopes range from 2 to 12 percent. Pricetown soils are fine-silty, siliceous, mesic Typic Paleudults.

Pricetown soils are associated on the landscape with Christian, Frankstown, and Teddy soils. Christian soils are in a clayey family and are on higher side slopes and ridgetops. Frankstown soils have a solum less than 60 inches thick and are on side slopes and narrow ridgetops. Frankstown and Teddy soils are in a fine-loamy family. Teddy soils have a fragipan and are in the more level landscape positions.

Typical pedon of Pricetown silt loam, 2 to 6 percent slopes; about 12 miles southeast of Stanford, on the west side of Ephesos School Road, about 0.75 mile north of Pollard School Road, about 50 feet west of Ephesos School Road; USGS Crab Orchard topographic quadrangle; lat. 37 degrees 24 minutes 22 seconds N. and long. 84 degrees 33 minutes 56 seconds W.

Ap—0 to 9 inches; brown (10YR 4/3) silt loam; weak fine granular structure; friable; common fine roots; slightly acid; abrupt smooth boundary.

Bt1—9 to 19 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; common fine roots; few faint clay films on faces of peds; slightly acid; clear smooth boundary.

Bt2—19 to 27 inches; strong brown (7.5YR 5/6) silty clay loam; moderate medium subangular blocky structure; firm; few fine roots; common distinct clay films on faces of peds; strongly acid; clear smooth boundary.

Bt3—27 to 42 inches; yellowish brown (10YR 5/6) silty clay loam; few medium prominent red (2.5YR 5/8) mottles; moderate medium subangular blocky structure; firm; common distinct clay films on faces of peds; strongly acid; clear smooth boundary.

2Bt4—42 to 65 inches; reddish brown (5YR 5/6) silty clay; common medium prominent light brown (7.5YR 6/3) and common medium faint strong brown (7.5YR 5/6) mottles; moderate medium angular blocky structure parting to weak medium subangular blocky; firm; common distinct clay films on faces of peds; about 2 percent sandstone and chert fragments; very strongly acid.

Depth to bedrock is more than 60 inches. Reaction ranges from very strongly acid to moderately acid,

unless the soil is limed. The content of chert or limestone fragments ranges from 0 to 5 percent in the Ap and Bt horizons and from 0 to 35 percent in the 2Bt horizon.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4. Texture is silt loam.

Some pedons have a BA horizon. This horizon has hue of 10YR, value of 5, and chroma of 4 to 6. Texture is silt loam.

The Bt horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 4 to 6. Texture is silt loam or silty clay loam.

The 2Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 to 8. It has few or common mottles and redoximorphic features in shades of brown, yellow, and gray in the lower part. Texture of the fine-earth fraction is silty clay loam, silty clay, or clay.

Robertsville Series

The Robertsville series consists of very deep, poorly drained soils that have a fragipan in the subsoil. These soils formed in mixed alluvium. They are on stream terraces and in low areas in the uplands. Slopes range from 0 to 2 percent. Robertsville soils are fine-silty, mixed, mesic Typic Fragiaqualfs.

Robertsville soils are associated on the landscape with Christian, Frankstown, Lawrence, Johnsburg, Melvin, Newark, Pricetown, and Teddy soils. Christian, Frankstown, and Pricetown soils are well drained. Christian soils are on the higher ridgetops. Frankstown soils are on narrow ridgetops and side slopes. Lawrence and Johnsburg soils are somewhat poorly drained and are in the slightly higher positions. Pricetown soils are on broad ridgetops. Teddy soils are moderately well drained and are on broad ridgetops.

Typical pedon of Robertsville silt loam in an area of Lawrence-Robertsville complex; about 5 miles south of Stanford, 0.7 mile east of Kentucky Highway 643, about 600 feet northeast of a stream; USGS Crab Orchard topographic quadrangle; lat. 37 degrees 26 minutes 28 seconds N. and long. 84 degrees 36 minutes 36 seconds W.

Ap—0 to 6 inches; light brownish gray (10YR 6/2) silt loam; weak fine granular structure; very friable; common fine roots; few medium distinct yellowish brown (10YR 5/6) iron concentrations; moderately acid; abrupt smooth boundary.

Btg—6 to 18 inches; gray (10YR 6/1) silt loam; moderate medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; common medium faint pale brown (10YR 6/3) iron concentrations; strongly acid; gradual smooth boundary.

Btx—18 to 36 inches; light gray (10YR 7/2) silt loam; weak very coarse prismatic structure parting to moderate fine subangular blocky; very firm; few roots between prisms; few distinct clay films on faces of peds; few fine gray (10YR 6/1) silt coats in seams between prisms; common medium prominent yellowish brown (10YR 5/6) iron concentrations; brittle in 75 percent of the mass; strongly acid; clear smooth boundary.

B´tg1—36 to 48 inches; light gray (10YR 7/2) silt loam; moderate medium subangular blocky structure; firm; few distinct clay films on faces of peds; common medium prominent yellowish brown (10YR 5/6) iron concentrations; very strongly acid; gradual smooth boundary.

B´tg2—48 to 62 inches; light gray (2.5YR 7/2) silty clay loam; moderate medium subangular blocky structure; firm; few faint clay films on faces of peds; common medium prominent yellowish brown (10YR 5/6) iron accumulations; very strongly acid.

Depth to bedrock is more than 60 inches. Depth to the fragipan ranges from 15 to 36 inches. Reaction ranges from extremely acid to strongly acid, unless the soil is limed.

The Ap horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 or 2. In most pedons, the horizon commonly has redoximorphic features in shades of brown or gray. Texture is silt loam.

The Btg horizon has hue of 10YR to 5Y, value of 6 or 7, and chroma of 1 or 2. It has few or common redoximorphic features in shades of brown, yellow, and gray. Texture is silt loam or silty clay loam.

The Btx horizon has hue of 10YR to 5Y, value of 5 to 7, and chroma of 1 or 2, or it is neutral in hue and has value of 5 to 7. The horizon has few to many iron concentrations and depletions in shades of brown, yellow, or gray. Texture is silt loam or silty clay loam.

The B´tg horizon has hue of 10YR to 5Y, value of 5 to 7, and chroma of 2 or less. In some pedons, it has gley hues, value of 5 to 7, and chroma of 2 or less. The horizon has common or many redoximorphic concentrations in shades of brown or red. Texture is silt loam or silty clay loam.

Sandview Series

The Sandview series consists of very deep, well drained, moderately permeable soils. These soils formed in a silty mantle over residuum weathered from limestone. They are on broad ridges in the uplands, mainly in the Inner and Outer Bluegrass regions of the

survey area. Slopes range from 2 to 12 percent. Sandview soils are fine-silty, mixed, mesic Typic Hapludalfs.

Sandview soils are associated on the landscape with Faywood, Lowell, and Nicholson soils. Faywood and Lowell soils are on side slopes and narrow ridgetops and are in a fine textured family. The Nicholson soils have a fragipan and are moderately well drained.

Typical pedon of Sandview silt loam, phosphatic, 2 to 6 percent slopes; about 8 miles north of Lancaster, 0.9 mile north of Kentucky Highway 34, about 0.8 mile west of U.S. Highway 27, about 50 feet north of a farm lane; USGS Bryantsville topographic quadrangle; lat. 37 degrees 41 minutes 48 seconds N. and long. 84 degrees 40 minutes 40 seconds W.

Ap—0 to 10 inches; brown (10YR 4/3) silt loam; moderate medium granular structure; friable; few fine roots; neutral; abrupt smooth boundary.

Bt1—10 to 18 inches; dark yellowish brown (10YR 4/4) silt loam; moderate medium subangular blocky structure; friable; few fine roots; few distinct clay films on faces of peds; few fine black manganese concretions; neutral; clear smooth boundary.

Bt2—18 to 32 inches; brown (7.5YR 4/4) silty clay loam; moderate medium subangular blocky structure; friable; common distinct clay films on faces of peds; common fine black manganese concretions; slightly acid; clear smooth boundary.

Bt3—32 to 38 inches; strong brown (7.5YR 4/6) silty clay loam; moderate fine angular blocky structure; firm; many distinct clay films on faces of peds; many fine black manganese concretions; moderately acid; clear wavy boundary.

2Bt4—38 to 49 inches; strong brown (7.5YR 4/4) silty clay; common medium distinct yellowish brown (10YR 5/6) mottles; moderate fine angular blocky structure; firm; many distinct clay films; strongly acid; clear wavy boundary.

2Bt5—49 to 74 inches; brown (7.5YR 4/4) silty clay; many coarse distinct yellowish brown (10YR 5/6) mottles; weak fine angular blocky structure; firm; very strongly acid.

Depth to bedrock is more than 60 inches. Reaction ranges from very strongly acid to slightly alkaline. The content of rock fragments ranges from 0 to 10 percent throughout the profile.

The Ap horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 to 4. Texture is silt loam.

The Bt horizon has hue of 5YR to 10YR, value of 4 to 6, and chroma of 4 to 8. In some pedons, the horizon has few or common mottles in shades of brown in the lower part. Texture is silt loam or silty clay loam.

The 2Bt horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 8. Some pedons have few or common mottles in shades of brown, gray, and olive. Texture is silty clay or clay.

Some pedons have a 2C horizon. This horizon has colors and textures similar to those of the 2B horizon.

Shrouts Series

The Shrouts series consists of moderately deep, well drained, slowly permeable soils. These soils formed in clayey material weathered from calcareous shale. They are on ridgetops and side slopes in the uplands, mainly in the Outer Bluegrass region of the survey area. Slopes range from 6 to 50 percent. Shrouts soils are fine, mixed, mesic Typic Hapludalfs.

Shrouts soils are associated on the landscape with Beasley, Cynthiana, Faywood, Garlin, and Lowell soils. Beasley and Lowell soils are underlain by bedrock at a depth of more than 40 inches. Cynthiana and Garlin soils are underlain by bedrock at a depth of 10 to 20 inches. Garlin soils are in a fine-loamy family. Faywood soils are underlain by hard limestone.

Typical pedon of Shrouts silty clay loam, 6 to 12 percent slopes, eroded; about 3.5 miles east of Stanford, 0.6 mile east of the junction of U.S. Highway 150 and Preachersville Road, 300 feet southeast of Preachersville Road, near a pond; USGS Crab Orchard topographic quadrangle; lat. 37 degrees 31 minutes 11 seconds N. and long. 84 degrees 36 minutes 12 seconds W.

Ap—0 to 4 inches; dark yellowish brown (10YR 4/4) silty clay loam; weak fine granular structure; firm; common fine roots; strongly acid; abrupt smooth boundary.

Bt1—4 to 12 inches; yellowish brown (10YR 5/6) silty clay; common medium distinct light olive brown (2.5Y 5/4) mottles; moderate medium subangular blocky structure; very firm; common fine roots; common distinct clay films on faces of peds; few black manganese concretions; moderately acid; clear smooth boundary.

Bt2—12 to 26 inches; olive brown (2.5Y 4/4) clay; few medium distinct dark yellowish brown (10YR 4/6) mottles; moderate medium angular blocky structure; very firm; common prominent clay films on faces of peds; few black manganese concretions; slightly alkaline; abrupt wavy boundary.

Cr—26 to 35 inches; olive brown (2.5Y 4/4) clay shale; slightly effervescent; moderately alkaline.

Depth to soft bedrock ranges from 20 to 40 inches. Reaction ranges from strongly acid to moderately

alkaline. The content of rock fragments ranges from 0 to 20 percent in the Ap and Bt horizons.

The Ap horizon has hue of 10YR to 5Y, value of 3 to 6, and chroma of 1 to 6. Texture is silty clay loam.

The Bt horizon has hue of 10YR, 2.5Y, 5Y, 5BG, or 5GY, value of 5 or 6, and chroma of 1 to 6. Texture of the fine-earth faction is silty clay or clay.

Some pedons have a C horizon. This horizon has hue of 2.5Y, 5Y, 5BG, or 5GY or is neutral in hue, has value of 4 to 6, and has chroma of 0 to 6. Texture of the fine-earth fraction is silty clay or clay.

Skidmore Series

The Skidmore series consists of deep and very deep, well drained, moderately rapidly permeable soils. These soils formed in gravelly alluvium derived from sandstone, siltstone, and limestone. They are on narrow flood plains in the Pennyroyal and Knobs regions of the survey area. Slopes range from 0 to 2 percent. Skidmore soils are loamy-skeletal, mixed, mesic Dystric Fluventic Eutrochrepts.

Skidmore soils are associated on the landscape with Carpenter, Newark, Nolin, and Yosemite soils. Carpenter soils are on colluvial toeslopes above the Skidmore soils and are in a fine-loamy family. Newark and Nolin soils are in a fine-silty family. Newark and Yosemite soils are somewhat poorly drained.

Typical pedon of Skidmore very gravelly silt loam, frequently flooded; about 5 miles southwest of Eubank, 500 feet east of Fishing Creek, 100 feet north of Pilot Creek; USGS Eubank topographic quadrangle; lat. 37 degrees 15 minutes 57 seconds N. and long. 84 degrees 43 minutes 02 seconds W.

Ap—0 to 8 inches; brown (10YR 5/3) very gravelly silt loam; weak fine granular structure; very friable; common fine roots; about 40 percent rounded and subrounded fragments; slightly acid; clear smooth boundary.

Bw1—8 to 20 inches; brown (10YR 4/3) very gravelly loam; weak fine subangular blocky structure; friable; common fine roots; about 50 percent rounded and subrounded fragments; slightly acid; gradual smooth boundary.

Bw2—20 to 32 inches; dark yellowish brown (10YR 4/4) very gravelly loam; few medium distinct yellowish brown (10YR 5/6) mottles; weak fine and medium subangular blocky structure; friable; about 50 percent rounded and subrounded fragments; slightly acid; gradual smooth boundary.

C—32 to 65 inches; dark yellowish brown (10YR 4/4) extremely gravelly loam; single grain; loose; about 60 percent rounded and subrounded fragments; slightly acid.

Depth to bedrock is more than 40 inches. Reaction ranges from moderately acid to slightly alkaline. The content of rock fragments ranges from 10 to 50 percent in the Ap and Bw horizons and from 35 to 90 percent in the C horizon.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4. Texture of the fine-earth fraction is loam.

The Bw horizon has hue of 7.5YR to 10YR, value of 4 to 6, and chroma of 3 to 6. In some pedons, the horizon has gray iron depletions in the lower part. Texture of the fine-earth fraction is loam, fine sandy loam, sandy loam, or clay loam.

The C horizon has colors similar to those of the Bw horizon. Some pedons have common gray iron depletions. Texture of the fine-earth fraction is loam, fine sandy loam, sandy loam, or clay loam.

Teddy Series

The Teddy series consists of very deep, moderately well drained soils that have a fragipan in the subsoil. These soils formed in a loamy mantle over residuum weathered from limestone, shale, sandstone, and siltstone. They are on broad ridgetops in the Pennyroyal region of the survey area. Slopes range from 2 to 6 percent. Teddy soils are fine-loamy, siliceous, mesic Typic Fragiudults.

Teddy soils are associated on the landscape with Christian, Frankstown, Johnsburg, Lawrence, and Pricetown soils. Christian, Frankstown, and Pricetown soils do not have a fragipan and are well drained. Johnsburg and Lawrence soils are somewhat poorly drained. Christian soils are on the higher ridgetops and side slopes and are in a clayey family. Frankstown soils are on the lower side slopes and narrow ridgetops. Johnsburg and Lawrence soils are in the slightly lower positions. Pricetown soils are in a fine-silty family.

Typical pedon of Teddy silt loam, 2 to 6 percent slopes; about 5.9 miles south of Crab Orchard, 1.9 miles west of Kentucky Highway 39, about 0.3 mile northeast of Broughtentown, 150 feet south of Kentucky Highway 618; USGS Crab Orchard topographic quadrangle; lat. 37 degrees 23 minutes 00 seconds N. and long. 84 degrees 32 minutes 18 seconds W.

Ap—0 to 7 inches; brown (10YR 4/3) silt loam; weak fine granular structure; very friable; common fine roots; neutral; abrupt smooth boundary.

E—7 to 11 inches; pale brown (10YR 6/3) loam; weak fine granular structure; friable; common fine roots; neutral; abrupt smooth boundary.

Bt1—11 to 23 inches; yellowish brown (10YR 5/4) silt

loam; moderate medium subangular blocky structure; friable; common fine roots; few faint clay films on faces of peds; neutral; gradual smooth boundary.

Bt2—23 to 30 inches; yellowish brown (10YR 5/6) silt loam; moderate medium subangular blocky structure; firm; few fine roots; common faint clay films on faces of peds; many fine distinct strong brown (7.5YR 5/6) iron concentrations and many fine prominent light brownish gray (10YR 6/2) iron depletions; strongly acid; clear smooth boundary.

Btx1—30 to 38 inches; yellowish brown (10YR 5/6) silt loam; moderate very coarse prismatic structure parting to weak medium angular blocky; firm; few fine roots between prisms; common faint clay films on faces of prisms; common medium distinct strong brown (7.5YR 5/6) iron accumulations and light gray (10YR 6/2) iron depletions; brittle in 75 percent of the mass; strongly acid; gradual smooth boundary.

Btx2—38 to 48 inches; yellowish brown (10YR 5/6) silt loam; moderate very coarse prismatic structure; very firm; common faint clay films on faces of peds; common medium distinct pale brown (10YR 6/8) iron concentrations and common medium prominent light brownish gray (10YR 6/2) iron depletions; 3 percent sandstone fragments; brittle in 80 percent of the mass; very strongly acid; gradual smooth boundary.

2Bt—48 to 65 inches; yellowish red (5YR 5/4) clay loam; moderate medium subangular blocky structure; very firm; common faint clay films on faces of peds; common medium prominent brownish yellow (10YR 6/8) iron accumulations and very pale brown (10YR 7/3) iron depletions; very strongly acid.

Depth to bedrock is more than 60 inches. Depth to the fragipan ranges from 18 to 36 inches. Reaction ranges from very strongly acid to slightly acid, unless the soil is limed. The content of rock fragments ranges from 0 to 5 percent in the Ap, Bt, and Btx horizons and from 0 to 15 percent in the 2Bt horizon.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 3 or 4. Texture is silt loam.

The E horizon has hue of 10YR, value of 5 or 6, and chroma of 2 to 4. Texture is silt loam or loam.

The Bt horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 3 to 6. Texture is silt loam, loam, or silty clay loam.

The Btx horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 3 to 8. It has few to many iron concentrations and depletions in shades of gray and brown. Texture is loam, silt loam, or clay loam.

The 2Bt horizon has hue of 2.5YR to 10YR, value of 4 to 6, and chroma of 1 to 6. It has few to many iron accumulations and depletions in shades of brown, gray, or red. Texture is silty clay loam, silty clay, or clay loam.

Tilsit Series

The Tilsit series consists of deep and very deep, moderately well drained soils that have a fragipan in the subsoil. These soils formed in residuum weathered from siltstone, sandstone, and shale. They are on broad ridgetops, mainly in the Knobs region of the survey area. Slope ranges from 2 to 12 percent. Tilsit soils are fine-silty, mixed, mesic Typic Fragiudults.

Tilsit soils are associated on the landscape with Berea, Colyer, Greenbriar, Jessietown, Johnsburg, Mullins, and Trappist soils. Berea, Jessietown, and Trappist soils are underlain by bedrock at a depth of 20 to 40 inches. Colyer soils are on side slopes and are underlain by bedrock at a depth of 10 to 20 inches. Colyer, Greenbriar, Jessietown, and Trappist soils are well drained. Johnsburg soils are somewhat poorly drained. Mullins soils are poorly drained. Trappist soils are on side slopes and narrow ridgetops and are in a clayey family.

Typical pedon of Tilsit silt loam, 2 to 6 percent slopes; about 1.4 miles west of Moreland, 2.2 miles north of Kentucky Highway 78, about 200 feet east of Black Pike, 50 feet north of a farm lane; USGS Junction City topographic quadrangle; lat. 37 degrees 30 minutes 05 seconds N. and long. 84 degrees 50 minutes 13 seconds W.

Ap—0 to 6 inches; brown (10YR 4/3) silt loam; moderate medium granular structure; friable; common fine roots; about 3 percent channers; moderately acid; abrupt smooth boundary.

Bt—6 to 20 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; firm; common fine roots; few distinct clay films on faces of peds; about 3 percent channers; very strongly acid; abrupt smooth boundary.

Btx—20 to 36 inches; yellowish brown (10YR 5/6) silty clay loam; weak very coarse prismatic structure parting to moderate medium subangular blocky; very firm; few fine roots between prisms; few distinct clay films on prism faces; many coarse distinct strong brown (7.5YR 5/8) iron concentrations and many coarse prominent light brownish gray (2.5Y 6/2) iron depletions; brittle in 75 percent of the mass; very strongly acid; clear smooth boundary.

BC—36 to 42 inches; yellowish brown (10YR 5/8) silty clay loam; common medium distinct brown (7.5YR 5/4) mottles; weak medium subangular blocky

structure; firm; many coarse prominent light brownish gray (2.5Y 6/2) iron depletions; about 10 percent shale channers; extremely acid; abrupt smooth boundary.

Cr—42 to 46 inches; black (5YR 2/1) and dark reddish gray (5YR 4/2) weathered shale bedrock; abrupt smooth boundary.

R—46 inches; hard black (5YR 2/1) shale bedrock.

Depth to hard bedrock ranges from 40 to 120 inches. Depth to the fragipan ranges from 18 to 30 inches. Reaction ranges from extremely acid to strongly acid, unless the soil is limed. The content of rock fragments ranges from 0 to 10 percent in the Ap, Bt, and Btx horizons and from 0 to 40 percent in the BC horizon.

The Ap horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 to 4. Texture is silt loam.

The Bt horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8. In some pedons, the horizon is mottled in shades of brown in the upper part and has few or common redoximorphic features in shades of gray and brown in the lower part. Texture is loam, silt loam, or silty clay loam.

The Btx horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 2 to 8. The horizon has few or common redoximorphic features in shades of gray, brown, olive, or yellow. Texture of the fine-earth fraction is loam, silt loam, or silty clay loam.

The BC horizon has colors similar to those of the Btx horizon. Texture of the fine-earth fraction is silt loam or silty clay loam.

Some pedons have a C horizon. This horizon has colors similar to those of the Btx horizon. Texture of the fine-earth fraction is silt loam, silty clay loam, clay loam, or silty clay.

Trappist Series

The Trappist series consists of moderately deep, well drained, slowly permeable soils. These soils formed in fine textured residuum from black shale and siltstone. They are on ridgetops and side slopes, mainly in the Knobs region of the survey area. Slopes range from 2 to 60 percent. Trappist soils are clayey, mixed, mesic Typic Hapludults.

Trappist soils are associated on the landscape with Berea, Carpenter, Colyer, Lenberg, and Tilsit soils. Berea and Tilsit soils are moderately well drained and are in a fine-silty family. Carpenter and Lenberg soils are on steep slopes above the Trappist soils. Carpenter soils are in a fine-loamy family and have soft bedrock at a depth of more than 40 inches. Colyer soils have bedrock at a depth of less than 20 inches and are in a clayey-skeletal family. Lenberg soils are in a fine textured family and are underlain by soft bedrock. Tilsit soils have bedrock at a depth of more than 40 inches and are on broad ridgetops.

Typical pedon of Trappist silty clay loam in an area of Trappist-Colyer complex, 12 to 25 percent slopes, eroded; about 2 miles south of McKinney, 0.75 mile northeast of Meetinghouse Knob, about 300 feet east of Kentucky Highway 196; USGS Hustonville topographic quadrangle; lat. 37 degrees 25 minutes 36 seconds N. and long. 84 degrees 44 minutes 40 seconds W.

Ap—0 to 7 inches; brown (10YR 4/3) silty clay loam; weak fine granular structure; friable; many fine roots; neutral; clear smooth boundary.

Bt1—7 to 12 inches; strong brown (7.5YR 5/6) silty clay; moderate medium subangular blocky structure; firm; common fine and medium roots; common distinct clay films on faces of peds; about 5 percent channers; moderately acid; gradual smooth boundary.

Bt2—12 to 20 inches; brown (7.5YR 4/4) silty clay; moderate medium subangular blocky structure; firm; many prominent clay films on faces of peds; few fine black manganese concretions; about 5 percent shale channers; strongly acid; gradual smooth boundary.

Bt3—20 to 26 inches; brown (7.5YR 4/4) channery silty clay; moderate medium subangular blocky structure; firm; many prominent clay films on faces of peds; few fine black manganese concretions; 30 percent shale channers; very strongly acid; gradual wavy boundary.

C—26 to 35 inches; variegated brown (7.5YR 5/4), yellowish red (5YR 5/6), and pale brown (10YR 6/3) very channery silty clay; massive parting to thick platy structure; very firm; about 45 percent shale channers; strongly acid; clear smooth boundary.

R—35 inches; hard black (N 2/0) fissile shale.

Depth to bedrock ranges from 20 to 40 inches. Reaction ranges from strongly to extremely acid, except where the soil is limed. The content of fragments of shale and siltstone ranges from 0 to 35 percent in the Ap and Bt horizons and from 25 to 75 percent in the C horizon.

The Ap horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 to 4. Texture is silty clay loam.

The Bt horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 4 to 8. In some pedons, the horizon has few or common mottles in shades of red or brown in the lower part. Texture of the fine-earth fraction is silty clay loam, silty clay, or clay.

The C horizon has a mottled pattern in shades of red, brown, and gray. Texture of the fine-earth fraction is silty clay or clay.

Yosemite Series

The Yosemite series consists of very deep, somewhat poorly drained, moderately rapidly permeable soils. These soils formed in gravelly alluvium. They are on narrow flood plains, mainly in the Pennyroyal and Knobs regions of the survey area. Slopes range from 0 to 2 percent. Yosemite soils are loamy-skeletal, mixed, nonacid, mesic Aeric Fluvaquents.

Yosemite soils are associated on the landscape with Carpenter, Nolin, Melvin, and Skidmore soils. Carpenter soils are on adjacent side slopes. They are well drained and in a fine-loamy family. Nolin and Skidmore soils are well drained. Melvin and Nolin soils are in a fine-silty family. Melvin soils are poorly drained.

Typical pedon of Yosemite gravelly silt loam, frequently flooded; about 2 miles south of Geneva, about 0.5 mile east of the junction of Rube Brown Road and Kentucky Highway 1778, about 150 feet north of Rube Brown Road; USGS Halls Gap topographic quadrangle; lat. 37 degrees 25 minutes 24 seconds N. and long. 84 degrees 27 minutes 52 seconds W.

Ap—0 to 6 inches; brown (10YR 4/3) gravelly silt loam; weak fine granular structure; very friable; many fine roots; about 30 percent rounded and subrounded fragments; slightly acid; clear smooth boundary.

Bw—6 to 21 inches; yellowish brown (10YR 5/4) very gravelly silt loam; weak medium subangular blocky structure; very friable; few fine roots; common fine distinct light gray (10YR 7/2) iron depletions; about 40 percent rounded and subrounded fragments; moderately acid; clear smooth boundary.

Cg—21 to 60 inches; light grayish brown (10YR 6/2) extremely gravelly loam; single grain; loose; many medium distinct yellowish brown (10YR 5/6) iron concentrations; about 65 percent rounded and subrounded fragments; neutral.

Depth to bedrock is more than 60 inches. Reaction ranges from moderately acid to slightly alkaline. The content of rock fragments, mostly rounded gravel, ranges from 15 to 35 percent in the Ap horizon, from 20 to 40 percent in the Bw horizon, from 35 to 80 percent in the Bg horizon, and from 35 to 85 percent in the Cg horizon.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4. Texture of the fine-earth fraction is silt loam.

The Bw horizon has hue of 10YR, value of 4 to 6, and chroma of 3 or 4. It has common or many iron concentrations and depletions in shades of brown or gray. Texture of the fine-earth fraction is loam, silt loam, or sandy clay loam.

The Bg horizon, if it occurs, has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 2 or less. It has iron concentrations in shades of brown or red. The fine-earth fraction is loam, silt loam, sandy loam, silty clay loam, clay loam, or sandy clay loam.

The Cg horizon has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 2 or less. It has few to many iron concentrations in shades of brown or red. Texture of the fine-earth fraction is sandy clay loam, sandy loam, clay loam, or silty clay loam.

Formation of the Soils

This section relates factors of soil formation to the soils in Garrard and Lincoln Counties. It also discusses the process of soil formation and the geology of the survey area.

Factors of Soil Formation

Soil is a natural body consisting of mineral and organic matter, water, and air that can support plant growth. Soils form through the interaction of five major factors: parent material, time, climate, living organisms, and topography *(6)*. These factors are interrelated, and each factor affects the others. In the survey area, parent material and relief vary greatly but the influence of climate and living organisms has been fairly uniform.

Parent Material

Parent material is the raw material in which soil forms. The character of the parent material strongly influences the nature of the soil that develops. The nature of the parent material affects the rate of weathering and determines the texture and mineral composition of the soil. These properties affect the chemical composition, permeability, shrink-swell potential, and porosity of the soil. Some of the Inner Bluegrass limestones in the northern part of the survey area have a higher level of phosphates than the Outer Bluegrass or Pennyroyal limestones. As a result, the soils that formed from the Inner Bluegrass limestones have a higher natural phosphate content *(21, 22, 58, 61, 62, 63)*. The soils that formed from the Bluegrass limestones, such as Faywood and Cynthiana soils, tend to be brown while the soils that formed from the Pennyroyal limestones, such as Christian and Pricetown soils, tend to be red. Culleoka soils, which formed dominantly in material weathered from siltstone, are coarser textured than the adjacent Lowell soils that formed in material weathered from limestone and shale. Garlin soils, which formed in interbedded marl, calcareous siltstone, and sandstone, have a high content of carbonates and are alkaline.

The soils in Garrard and Lincoln Counties formed in residual, alluvial, colluvial, and eolian (windblown) parent material. Most of the soils formed in residual material weathered in place from sedimentary rock from the Ordovician, Devonian, and Mississippian periods *(30, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71)*. These sedimentary rocks consist of limestone, siltstone, shale, sandstone, and marl. Many soils formed in more than one parent material or in interbedded parent materials. Lowell and Faywood soils formed in interbedded limestone and calcareous shale. Christian and Frankstown soils formed in limestone, shale, and siltstone. Garlin soils formed in marl and calcareous sandstone and siltstone. Other soils formed in one kind of parent material. Trappist and Colyer soils formed in hard black shale. Lenberg soils formed in soft greenish gray shale.

Alluvium is the parent material of the soils on flood plains and terraces. It contains various mixtures of gravel, sand, silt, and clay washed from soils on the uplands. Elk, Melvin, and Newark soils have a loamy subsoil while Boonesboro, Skidmore, and Yosemite soils have a gravelly subsoil. Chenault soils, which are in high terrace positions near the Dix River, have a gravelly surface layer and upper subsoil that formed in old alluvium and a lower subsoil that formed in residual material from limestone.

Colluvium is one of the parent materials of Carpenter soils. The upper part of Carpenter soils formed in colluvium transported downhill by gravity, over residual material weathered from shale and siltstone. Carpenter soils are loamy in the surface layer and the upper part of the subsoil, which formed in colluvium, and are clayey in the lower part of the subsoil, which formed in residuum from shale.

Eolian parent material contributes to the parent material of several soils in the survey area. In some soils such as Pricetown, Sandview, and Tilsit, the surface layer and the upper part of the subsoil formed in a loamy mantle, possibly loess, over residual material *(68)*.

Time

The time required for a soil to form depends on the other soil-forming factors *(6)*. Less time is required for a soil to form in a warm, moist climate than in a cool,

dry climate. In addition, some parent material is more resistant to weathering than other. The relative degree of profile development, rather than the number of years that the soil has been in the process of forming, determines the age or maturity of a soil.

Soils that have characteristics that are almost identical to those of the parent material are considered immature or young. In the survey area, immature soils are on the flood plains where fresh deposition of material prevents the development of distinct horizons. Nolin and Melvin are examples of these immature soils. Immature soils also occur on steep landscapes where geologic erosion and runoff prevent horizon development. Fairmount, Garmon, and Garlin soils are examples of these immature soils.

Soils that have well developed profiles are considered mature or old. Pricetown, Sandview, and Greenbriar soils are very deep or deep over bedrock and have distinct, well developed profiles. Gently sloping and sloping soils most clearly show the influence of all of the soil-forming factors. Although excess water runs off these soils, erosion is not excessive. Because the surface layer is relatively stable, an argillic horizon has formed in these soils. Christian, Frankstown, Lowell, and Trappist soils are examples of these relatively mature soils.

Climate

Climatic factors, mainly temperature and rainfall, affect the physical, chemical, and biological properties of soils. Climate influences the kind and number of plants and animals, the weathering and decomposition of rocks and minerals, the extent of erosion, and the rate of soil formation. Climate is probably the most influential factor in soil formation *(6)*. Because it affects such factors as erosion and deposition, climate also influences the topography of an area and the degree of profile development *(11)*.

The climate in the survey area is humid and temperate. The soils are seldom completely dry and are frozen for only short periods. The processes of soil formation have continued nearly uninterrupted. Many of the soils in the Pennyroyal region have been subject to nearly continual leaching, which has moved many of the soluble bases and clay minerals from the upper horizons to the lower horizons. As a result, many of the soils are acid and have a loamy surface layer and a subsoil in which clay from the upper layers has accumulated. Examples are Christian, Frankstown, and Pricetown soils. Many of the soils of the Inner and Outer Bluegrass regions, such as Lowell, Faywood, and Sandview, have been subject to leaching. Although these soils are not as acid as the soils in the Pennyroyal region, they have had clay leached from the upper part of the profile and accumulated in the lower part. The formation of a fragipan in some of the soils in the survey area is also a result of the humid and temperate climate. Fragipans do not form in areas where there is little rainfall. While the actual causes for the formation of a fragipan are not clear, fragipans do form in areas where rainfall is abundant, drainage is impeded, and the soils are nearly level and slightly sloping. Nicholson, Tilsit, and Teddy are examples of soils with fragipans.

Although the soil temperature, moisture content, and plant cover are somewhat different on north-facing and south-facing slopes, these differences are generally slight in the survey area. While these differences have not affected soil formation to any great extent, they may cause differences in woodland productivity in some soils, such as Garmon.

Living Organisms

Living organisms, including plants, animals, bacteria, fungi, and humans, affect soil formation. These organisms add organic matter, mix soil, cycle nutrients, and accelerate weathering. Plants generally have influenced the soils in the survey area more than animals. Trees and other plants cycle nutrients from the lower part of the soil to the upper part. They add organic matter, provide a protective cover that slows erosion, and influence soil temperature. Trees mix and move soil material by root channeling and through being uprooted by the wind. Most of the soils in the survey area formed under hardwood forests. The soils that remain wooded have a thin dark surface layer. Garmon soils are on steep slopes that are usually wooded and typically have a dark surface layer a few inches thick. In soils that have been cultivated, such as Beasley and Pricetown, the dark surface layer is mixed with the lighter colored layer below it.

Earthworms, insects, and small animals mix soil material and add organic material to the soil. Burrowing animals help to keep the soil open and porous. Bacteria and fungi break down plant and animal residue. Some micro-organisms directly and symbiotically release nutrients, such as nitrogen, to the soils.

Human activities have altered many of the soils in the survey area. Many soils have been eroded, drained, excavated, or filled. Areas of some soils, especially sloping soils, have lost part of their surface layer and are now considered eroded. Examples of these soils are the moderately eroded Garlin and Shrouts soils. Many of the poorly drained and somewhat poorly drained soils near the Green and Dix Rivers have been artificially drained.

Topography

Topography affects soil formation through its influence on drainage, erosion, plant cover, and soil temperature. Because it varies widely over the survey area, topography accounts for many differences among the soils. Topography tends to modify the effects of climate and vegetation. The loamy Nolin and Melvin soils tend to be on the broader flood plains along the larger drainageways. The gravelly Yosemite and Skidmore soils are on the narrower flood plains along smaller creeks. The depth to a water table is influenced by topography. On nearly level soils, little water runs off the surface. If the soil is not highly permeable or water remains in the soil for a long period, a high water table will result. Melvin soils, which formed on nearly level flood plains, have had a higher amount of water during formation compared to Nolin soils. This wetness resulted in a lack of oxidation and the formation of a gray subsoil. Some soils in low areas where water runs off slowly may have a high water table. This high water table is shown by gray colors in the soil profile. Mullins and Robertsville are examples of these soils. In other nearly level and gently sloping soils, a fragipan can form under certain conditions. Lawrence, Nicholson, and Teddy soils are examples. In some karst areas, material has been eroded from the surrounding slopes and deposited in the basin of the sinkholes. Some of these local alluvial areas are large enough to be mapped separately, but many others are small and are inclusions in the map units.

Some steep soils, such as Fairmount, are shallow and show slight profile development because geologic erosion takes place almost as rapidly as soil formation. Other steep soils, such as Garmon, are moderately deep because weathering of the underlying rock proceeds at a faster rate than geologic erosion. Some steep soils are deep because the parent material moves down the slopes slowly and accumulates at the lower part of the hill. This process is most apparent in areas of Carpenter soils on footslopes below steep slopes.

Process of Soil Formation

A soil is characterized by a given sequence of horizons, or layers *(6)*. The formation of these horizons is the result of one to four complex processes. These processes are additions, losses, translocations, and transformations *(11)*. These processes affect the formation and development of a soil, although in differing degrees. All of these processes have been active in the formation of the soils in Garrard and Lincoln Counties. In fact, these soil-forming processes are ongoing and are still active.

The addition of organic matter has occurred in all of the soils in the survey area. The accumulation of organic matter has resulted in the formation of a surface layer, called the A horizon. Most of the uneroded soils contain moderate amounts of organic matter in the surface layer.

The loss of carbonates in the upper part of most of the soils has caused the soils to become acid. This is the reason lime has to be added to the soils to maintain optimum plant growth. Although most of the soils formed in material that had a high content of carbonates, the carbonates and other soluble materials have been leached into the lower layers, as in Lowell soils, or out of the soil, as in Christian soils.

The translocation or movement of clay has resulted in the formation of argillic horizons in many of the soils in the survey area. The argillic horizon is a horizon characterized by the accumulation of clay. The A horizon or the E horizon is a zone of eluviation, or loss. The B horizon is a zone of illuviation, or gain. As clay is lost from A and E horizons, it accumulates in the B horizon in the form of clay films on the faces of peds and on the sides of pores and root channels.

Several types of transformations have occurred in the soils of Garrard and Lincoln Counties. One example is the reduction and transfer of iron. This process, called gleying, has occurred in soils that are poorly drained or somewhat poorly drained, such as Melvin and Newark soils. Gleying results in gray colors, which indicate the presence of reduced ferrous iron. The reduced iron is soluble, but it often has moved short distances and become reoxidized and segregated in the form of nodules, stains, and brown and red concentrations. These features, including a gray soil matrix, are considered redoximorphic features and indicate soil saturation *(20)*.

Another example of transformations in the survey area is the fragipan layers that have formed in soils such as Nicholson, Lawrence, and Teddy. A fragipan is a dense, compact layer that is hard when dry and brittle when moist. It is slowly permeable or very slowly permeable, and roots can only penetrate it through cracks.

As minerals in the soil weather and decompose over time, new types of minerals form. An example of this type of transformation is the release of iron as hydrated oxides from silicate clay through weathering. These iron oxides are generally red and, even if present in small amounts, give the soil a reddish or brownish color. The soils in the Pennyroyal region of the survey area are more weathered than the soils of the Bluegrass region and tend to have red a subsoil.

The soils in the Bluegrass region are less weathered and tend to have a brown subsoil.

Geology

The geology of the survey area ranges from very old to very recent. It varies from north to south and from east to west. Since parent material is one of the dominant factors in the formation of soil, knowledge of the geology of the survey area is helpful in understanding the soils of the survey area.

Most of the soils in the survey area formed in residuum derived from a variety of sedimentary rock. The dominant geologic formations are a mix of level-bedded limestone, siltstone, shale, and sandstone. The sedimentary rocks are primarily of the Ordovician, Silurian, Devonian, and Mississippian periods *(53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71)*. The tops of a few hills near Highland in Lincoln County are capped with conglomerate that is possibly of Tertiary age *(67)*. There are gravelly terrace and fluvial deposits along some of the streams and rivers that are possibly of Tertiary or Quaternary age *(63, 67, 71)*. Some of these areas contain many geodes. Recognized eolian deposits occur near Junction City *(68, 71)*. Several soils, such as Crider, Pricetown, Sandview, and Teddy, may have eolian materials contributing to the parent material of the upper solum. The valleys consist of alluvial material of Quaternary age.

The oldest rock is in the northern part of the survey area and is of middle Ordovician age. The High Bridge Group and the Lexington Limestone underlie much of the Inner Bluegrass region of the survey area. The High Bridge Group, which consists of the Camp Nelson Limestone, the Oregon Formation, and the Tyrone Limestone, is exposed near the Kentucky and Dix Rivers. Along the Kentucky River these limestones form steep bluffs known as the Kentucky Palisades. Fairmount and Faywood phosphatic soils are the dominant soils. Rock outcrop is common, especially on steep parts of the landscape.

The Lexington Limestone overlies the High Bridge Group and forms the broad ridgetops and short side slopes of the Inner Bluegrass region of the survey area. It is composed mainly of limestone, including phosphatic limestone, and some interbedded shale. It has many members, including the Grier Limestone and the Tanglewood Limestone. Outcrops are often fossiliferous *(63)*. This area is karst, and sinkholes are common. Generally the soils on the side slopes are shallow to moderately deep and are clayey. The soils on the ridgetops are moderately deep to very deep and have clayey or loamy subsoils. Lowell phosphatic, Faywood phosphatic, and Fairmount soils are the dominant soils on the sloping ridgetops and side slopes. In some areas, commonly the broader ridgetops, the upper part of the soils formed in silty material and the lower part formed in clayey material weathered from the underlying limestone and shale. Sandview phosphatic soils are the dominant soils in these areas.

The Clays Ferry Formation, the Garrard Siltstone, and the Calloway Creek Limestone are of middle and upper Ordovician age. The Clays Ferry Formation overlies the Lexington Limestone. It is one of the major formations in the Hills of the Bluegrass region of the survey area. It is exposed mainly on the east side of the Kentucky River Fault, on steep side slopes and low, narrow ridges. It is composed of limestone and shale. Eden soils are the dominant soils that formed from this formation. They are moderately deep and have a clayey subsoil, and limestone fragments make up about 15 to 25 percent of the surface layer. The Garrard Siltstone rests on the Clays Ferry Formation. It is composed of siltstone, shale, and limestone. Culleoka soils are the dominant soils. They are moderately deep and loamy. They are mapped on ridgetops in a consociation and on side slopes in an association with Eden soils.

The Calloway Creek Limestone is one of the major formations in the Hills of the Bluegrass and Outer Bluegrass regions of the survey area. It overlies the Garrard Siltstone. It is composed of limestone, shale, and siltstone. Most of the soils have a clayey subsoil. Generally, the soils on the ridgetops and upper side slopes are deep or moderately deep and the soils on the lower side slopes are moderately deep to shallow. Faywood, Cynthiana, and Lowell soils are the dominant soils that formed from this formation.

The Ashlock and Drakes Formations of upper Ordovician age cover much of the survey area. They are mainly in the Outer Bluegrass region of the survey area. The Ashlock Formation has several members that are composed of limestone, mudstone, and shale. It weathered to form rolling ridgetops and short side slopes. Generally, the soils on the ridgetops are moderately deep to very deep and the soils on the side slopes are shallow to moderately deep. Most of the soils have a clayey subsoil. Lowell and Faywood soils are dominant on the side slopes and narrower ridgetops. On the broader ridgetops, the upper part of the soils formed in a silty material and the lower part formed in clayey material weathered from the underlying limestone and shale. Crider, Sandview, and Nicholson soils are the dominant soils in these areas.

The Drakes Formation overlies the Ashlock Formation. It has two members, the Rowland and the Preachersville Members. The Rowland Member is limestone, claystone, and dolomite. The Preachersville Member is claystone, dolomite, and mudstone. This formation weathered to form rolling ridgetops and short side slopes. Generally, the soils on the ridgetops are moderately deep and deep, and the soils on the side slopes are shallow to moderately deep. Most of the soils have a clayey subsoil. Lowell and Faywood soils are the dominant soils. On the eastern side of the Outer Bluegrass part of the survey area, Lowell, Faywood, Beasley, Shrouts, and Garlin soils are the dominant soils. Beasley and Shrouts soils formed in material weathered from soft bedrock. Garlin soils formed in the siltstone, mudstone, and claystone that are locally called marl. They are shallow, loamy, and alkaline.

Silurian-age rock is in the eastern part of the Outer Bluegrass region of the survey area, near Crab Orchard and Preachersville. It is generally not exposed or is missing in other parts of the survey area. The Brassfield Dolomite and Crab Orchard Formations consist of mudstone and dolomite. These materials weathered to form rolling ridgetops and short side slopes. Beasley, Cynthiana, Shrouts, and Garlin soils are the dominant soils. Beasley and Shrouts soils formed in material weathered from soft bedrock.

Devonian-age rock is mainly in the Knobs region of the survey area. It consists of the Boyle Dolomite and the New Albany Shale. The Boyle Dolomite overlies either the Ordovician-age Drakes Formation or the Silurian-age rock. It is a hard resistant dolomite limestone. Hagerstown and Crider soils are the dominant soils. Hagerstown soils are on upper side slopes and formed from the material weathered from the dolomite. Crider soils are on the broad ridgetops. The upper part of Crider soils formed in silty material, and the lower part formed in clayey material weathered from the underlying dolomitic limestone.

The New Albany Shale overlies the Boyle Dolomite. It is black, fissile, carbonaceous shale. It commonly forms the lower part of the knob-shaped landscape features that give the Knobs region its name. It also weathers to form broad ridges, side slopes, and footslopes. The soils formed from this shale are shallow to very deep and have either clayey or loamy subsoils. Trappist, Colyer, and Tilsit soils are the dominant soils. Berea, Greenbriar, and Jessietown soils also formed from the New Albany Shale. The upper part of Berea, Greenbriar, Jessietown, and Tilsit soils formed in silty material, and the lower part formed in material weathered from the underlying black shale.

Mississippian-age rock is in the Pennyroyal and Knobs regions of the survey area. It is made up of the Borden Formation, the Salem Formation, and the St. Louis Limestone. The Borden Formation overlies the New Albany Shale. It has several members. The main ones are the New Providence Shale Member, the Nancy Member, the Halls Gap Member, the Muldraugh Member, and the Renfro Member. The New Providence Shale Member is greenish clay stone and clay shale. The Nancy Member is shale and siltstone. Soils formed from material weathered from this parent material are on the lower side slopes of the Knobs. Lenberg and Carpenter soils are dominant. Lenberg soils formed in residuum from the shale, and Carpenter soils formed in colluvium over the residuum. Soils formed in or over the New Providence Shale Member are prone to slippage. In the eastern part of the survey area, in the Knobs region, the Gum Sulphur Bed of the Nancy Member is the parent material for Gilpin soils.

The Halls Gap Member overlies the Nancy Member of the Borden Formation. The siltstone and shale weather to form steep slopes. Garmon soils formed in residuum from the shale and siltstone, and they are the dominant soils on the upper side slopes of the Knobs and on steep side slopes throughout the Pennyroyal region of the survey area. Small nodules and geodes found in the upper part of the Halls Gap Member commonly contain minerals of interest to collectors *(67)*.

In the eastern part of the survey area, the Renfro and Wildie Members of the Borden Formation overlie the Halls Gap Member. In the western part of the survey area, the Muldraugh Member overlies it. The Renfro and Wildie Members are siltstone, limestone, and shale. Frankstown soils are dominant on ridgetops and shoulder slopes. Lily and Gilpin soils developed where the sandstone occurs. The Muldraugh Member is siltstone, chert, and limestone. Frankstown soils are the dominant soils that formed in the residuum.

The Salem and Warsaw Formations overlie the Borden Formation. They are composed of limestone, siltstone, shale, and sandstone. These formations form many of the ridgetops in the Pennyroyal region of the survey area. Pricetown and Teddy soils are dominant on the broader ridgetops. Frankstown soils are the dominant soils on the narrow ridgetops and on the upper side slopes. Lily soils developed where the sandstone occurs. Spherical to discodial quartz-filled geodes as much as 2 feet in diameter occur in these formations *(55, 67)*.

The St. Louis Limestone overlies the Salem and Warsaw Formations. It is primarily limestone. It is on the higher ridgetops in the Pennyroyal region of the survey area. Christian and Pricetown soils are dominant.

Quaternary-age material consists chiefly of alluvial deposits on flood plains and stream terraces throughout the survey area. The largest areas of these deposits are along the Green River, the Upper Dix River, and Buck Creek. Nolin, Newark, Yosemite, and Melvin soils are the dominant soils on flood plains. Elk and Otwell soils are the dominant soils on stream terraces. There are also scattered high fluvial deposits as much as 40 feet thick on ridges near the Dix and Kentucky Rivers. These areas are commonly karst. Chenault soils are common in these areas.

Several faults are in the survey area. The Kentucky River Fault System crosses the entire survey area from the north to the southeast. The other faults are offshoots of the Kentucky River Fault. Just south of the Kentucky River on U.S. Highway 27, the strike and dip of the fault can be seen in the highway road cut. A vertical displacement in the rock strata of about 300 feet is evident *(58)*. The fault leaves the survey area at the Green River at the Middleburg Graben. The vertical displacement here is more than 200 feet *(64)*. Faults also run from the Stanford-Lancaster area eastward toward Crab Orchard and Cartersville.

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Glossary

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.

Aspect. The direction in which a slope faces.

Association, soil. A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 40-inch profile or to a limiting layer is expressed as:

Very low	0 to 2
Low	2 to 4
Moderate	4 to 6
High	6 to 12
Very high	more than 12

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Base slope. A geomorphic component of hills consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments (for example, slope alluvium).

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bottom land. The normal flood plain of a stream, subject to flooding.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Cable yarding. A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Channery soil material. Soil material that has, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chert. An impure, very fine-grained, siliceous rock frequently associated with limestone, dolomite, and conglomerate.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions. Low-chroma zones having a low

content of iron, manganese, and clay because of the chemical reduction of iron and manganese and the removal of iron, manganese, and clay. A type of redoximorphic depletion.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Claypan. A slowly permeable soil horizon that contains much more clay than the horizons above it. A claypan is commonly hard when dry and plastic or stiff when wet.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Colluvium. Soil material or rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

Conglomerate. A coarse-grained, clastic rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosion. Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cross-slope farming. Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Depth, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep soils, 20 to 40 inches; shallow soils, 10 to 20 inches; and very shallow soils, less than 10 inches.

Devonian period. The fourth period of the Paleozoic era of geologic time, extending from the end of the Silurian period (about 405 million years ago) to the beginning of the Mississippian period (about 345 million years ago).

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Dolomite. A sedimentary rock that is made up mainly of calcium and magnesium carbonate.

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained.* These classes are defined in the "Soil Survey Manual."

Drainage, surface. Runoff, or surface flow of water, from an area.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Excess fines (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain. Also called *normal field capacity, normal moisture capacity,* or *capillary capacity.*

Fine textured soil. Sandy clay, silty clay, or clay.

Fissile. The characteristic or quality of a rock that permits its distinct separation into parallel layers, as in shale.

Flaggy soil material. Material that has, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Footslope. The position that forms the inner, gently inclined surface at the base of a hillslope. In profile, footslopes are commonly concave. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

Forb. Any herbaceous plant not a grass or a sedge.

Forest type. A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Frost action (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

Geode. A hollow nodule, concretion, or vug that is commonly lined with inwardly pointed crystals.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily

runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hill. A natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Iron depletions. Low-chroma zones having a low content of iron and manganese oxide because of chemical reduction and removal, but having a clay content similar to that of the adjacent matrix. A type of redoximorphic depletion.

Karst (topography). The relief of an area underlain by limestone that dissolves in differing degrees, thus forming numerous depressions or small basins.

Knob. A low, rounded hill rising above adjacent landforms. In Kentucky, shale is the major rock on the side slopes of the knob.

Knoll. A small, low, rounded hill rising above adjacent landforms.

Leaching. The removal of soluble material from soil or other material by percolating water.

Limestone. A sedimentary rock consisting mainly of calcium carbonate, primarily calcite. Many limestones contain fossils.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess. Fine-grained material, dominantly of silt-sized particles, deposited by wind.

Low strength. The soil is not strong enough to support loads.

Marl. An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal amounts.

Masses. Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Mississippian period. The fifth period of the Paleozoic era of geologic time, extending from the end of the Devonian period (about 345 million years ago) to the beginning of the Pennsylvanian period (about 310 million years ago).

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon. A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent.* The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Mudstone. Sedimentary rock formed by induration of silt and clay in approximately equal amounts.

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules. Cemented bodies lacking visible internal structure. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up nodules. If formed in place, nodules of iron oxide or manganese oxide are considered types of redoximorphic concentrations.

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Ordovician period. The second period of the Paleozoic era of geologic time, extending from the end of the Cambrian period (about 500 million years ago) to the beginning of the Silurian period (about 425 million years ago).

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Paleozoic era. The geologic era between the Precambrian and Mesozoic eras. It began about 600 million years ago. It is characterized by the development of the first fish, amphibians, reptiles, and land plants.

Pan. A compact, dense layer in a soil that impedes the

movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan.*

Parent material. The unconsolidated organic and mineral material in which soil forms.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The movement of water through the soil.

Perennial stream. A creek or stream that has flowing water throughout the year.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

Extremely slow	0.0 to 0.01 inch
Very slow	0.01 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Physiographic. The structure and characteristics of the earth's surface.

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poor filter (in tables). Because of rapid or very rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

Poorly graded. Refers to a coarse-grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Redoximorphic concentrations. Nodules, concretions, soft masses, pore linings, and other features resulting from the accumulation of iron or manganese oxide. An indication of chemical reduction and oxidation resulting from saturation.

Redoximorphic depletions. Low-chroma zones from which iron and manganese oxide or a combination of iron and manganese oxide and clay has been removed. These zones are indications of the chemical reduction of iron resulting from saturation.

Redoximorphic features. Redoximorphic concentrations, redoximorphic depletions, reduced matrices, a positive reaction to alpha,alpha-

dipyridyl, and other features indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation.

Reduced matrix. A soil matrix that has low chroma in situ because of chemically reduced iron (Fe II). The chemical reduction results from nearly continuous wetness. The matrix undergoes a change in hue or chroma within 30 minutes after exposure to air as the iron is oxidized (Fe III). A type of redoximorphic feature.

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock.

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rill. A steep-sided channel resulting from accelerated erosion. A rill generally is a few inches deep and not wide enough to be an obstacle to farm machinery.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Root zone. The part of the soil that can be penetrated by plant roots.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments ranging from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shoulder. The position that forms the uppermost inclined surface near the top of a hillslope. It is a transition from backslope to summit. The surface is dominantly convex in profile and erosional in origin.

Shrink-swell (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Side slope. A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Sinkhole. A depression in the landscape where limestone has been dissolved.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slope. The inclination of the land surface from the

horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, classes for simple slopes are as follows:

Nearly level	0 to 2 percent
Gently sloping	2 to 6 percent
Moderately sloping	6 to 12 percent
Moderately steep	12 to 25 percent
Steep	25 to 50 percent
Very steep	50 percent and higher

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Slow intake (in tables). The slow movement of water into the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grain* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Substratum. The part of the soil below the solum.

Subsurface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope. The position that forms the gently inclined surface at the base of a hillslope. Toeslopes in

profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.

Topography. The configuration of the surface of an area, including the relative positions and elevations of the natural or manmade features.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Upland. Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Water bars. Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse-grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Windthrow. The uprooting and tipping over of trees by the wind.

Tables

Table 1.--Temperature and Precipitation

(Recorded in the period 1961-90 at Waynesburg, Kentucky)

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average daily	2 years in 10 will have-- Maximum temp. higher than--	2 years in 10 will have-- Minimum temp. lower than--	Average number of growing degree days*	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snowfall
	^{o}F	^{o}F	^{o}F	^{o}F	^{o}F	Units	In	In	In		In
January--	42.0	23.4	32.7	68	-13	10	3.78	1.97	5.37	7	6.9
February-	46.4	25.9	36.2	71	-4	19	3.86	2.04	5.46	7	5.1
March----	58.0	35.5	46.8	81	10	97	4.98	2.73	6.98	8	1.8
April----	67.7	44.3	56.0	86	23	230	4.50	2.69	6.12	7	0.3
May------	75.2	52.4	63.8	88	32	431	5.14	2.94	7.10	8	0.0
June-----	82.2	59.9	71.1	92	43	632	4.19	2.49	5.71	7	0.0
July-----	85.1	63.8	74.4	95	50	749	5.18	3.35	6.84	7	0.0
August---	84.3	62.7	73.5	95	48	729	3.98	2.27	5.49	6	0.0
September	78.5	56.5	67.5	92	37	525	4.30	2.21	6.13	6	0.0
October--	68.4	45.1	56.8	84	25	245	3.12	1.23	4.71	5	0.0
November-	57.0	37.3	47.2	77	13	85	4.28	2.49	5.88	7	1.2
December-	46.8	28.1	37.4	69	-2	23	4.83	2.52	6.85	7	2.6
Yearly:											
Average	66.0	44.6	55.3	---	---	---	---	---	---	---	---
Extreme	102	-22	---	96	-14	---	---	---	---	---	---
Total--	---	---	---	---	---	3,775	52.13	45.69	58.11	82	17.9

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 degrees F).

Table 2.—Freeze Dates in Spring and Fall

(Recorded in the period 1961-90 at Waynesburg, Kentucky)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Apr. 14	Apr. 25	May 4
2 years in 10 later than--	Apr. 8	Apr. 18	Apr. 29
5 years in 10 later than--	Mar. 28	Apr. 6	Apr. 19
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 28	Oct. 13	Oct. 2
2 years in 10 earlier than--	Nov. 3	Oct. 19	Oct. 8
5 years in 10 earlier than--	Nov. 12	Oct. 30	Oct. 18

Table 3.—Growing Season

(Recorded in the period 1961-90 at Waynesburg, Kentucky)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	207	180	162
8 years in 10	214	189	169
5 years in 10	228	206	182
2 years in 10	242	223	195
1 year in 10	249	232	202

Table 4.—Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Garrard County	Lincoln County	Total Area	Total Extent
		Acres	Acres	Acres	Pct
AlB	Allegheny loam, 2 to 6 percent slopes, rarely flooded	58	207	265	*
AlC2	Allegheny loam, 6 to 12 percent slopes, eroded	94	36	130	*
BaB	Beasley silt loam, 2 to 6 percent slopes	820	1,556	2,376	0.7
BbC2	Beasley silty clay loam, 6 to 12 percent slopes, eroded	2,160	4,806	6,966	1.9
BeB	Berea silt loam, 2 to 6 percent slopes	600	1,351	1,951	0.5
Bo	Boonesboro silt loam, frequently flooded	240	652	892	0.2
CaE2	Caneyville silt loam, 12 to 30 percent slopes, eroded, rocky	0	182	182	*
CeB	Carpenter gravelly silt loam, 2 to 6 percent slopes	65	718	783	0.2
CeC	Carpenter gravelly silt loam, 6 to 12 percent slopes	420	2,616	3,036	0.8
CgE2	Carpenter-Lenberg complex, 12 to 30 percent slopes, eroded	3,730	9,104	12,834	3.5
ChB	Chenault gravelly silt loam, 2 to 6 percent slopes	397	134	531	0.1
ChC	Chenault gravelly silt loam, 6 to 12 percent slopes	870	54	924	0.3
CkC	Chenault-Lowell complex, phosphatic, 6 to 12 percent slopes	760	213	973	0.3
ClD2	Chenault-Faywood complex, phosphatic, 12 to 25 percent slopes, eroded, rocky	825	192	1,017	0.3
CmB	Christian silt loam, 2 to 6 percent slopes	0	1,322	1,322	0.4
CmC2	Christian silt loam, 6 to 12 percent slopes, eroded	25	9,530	9,555	2.6
CoD2	Christian silty clay loam, 12 to 25 percent slopes, eroded	0	2,102	2,102	0.6
CpF2	Colyer-Trappist complex, 25 to 60 percent slopes, eroded, very rocky	359	770	1,129	0.3
CrB	Crider silt loam, 2 to 6 percent slopes	550	5,802	6,352	1.7
CrC	Crider silt loam, 6 to 12 percent slopes	210	876	1,086	0.3
CuB	Culleoka silt loam, 2 to 6 percent slopes	365	7	372	0.1
CuC2	Culleoka silt loam, 6 to 12 percent slopes, eroded	2,955	99	3,054	0.8
CuD2	Culleoka silt loam, 12 to 25 percent slopes, eroded	4,430	196	4,626	1.3
CyF2	Cynthiana-Faywood complex, 25 to 50 percent slopes, eroded, very rocky	1,340	5,277	6,617	1.8
DAM	Dam, large	10	0	10	*
DoB	Donerail silt loam, 2 to 6 percent slopes	150	0	150	*
EdD2	Eden flaggy silty clay loam, 8 to 25 percent slopes, eroded	1,565	203	1,768	0.5
EfF2	Eden-Culleoka association, 25 to 50 percent slopes, eroded, stony	22,940	371	23,311	6.4
EkB	Elk silt loam, 2 to 6 percent slopes	110	780	890	0.2
EkC	Elk silt loam, 6 to 12 percent slopes	335	529	864	0.2
EmB	Elk silt loam, 2 to 6 percent slopes, rarelY flooded	1,050	1,701	2,751	0.8
FaC2	Fairmount silty clay loam, 6 to 12 percent slopes, eroded, very rocky	174	0	174	*
FdF2	Fairmount-Faywood-Rock outcrop complex, 25 to 50 percent slopes, eroded	1,431	209	1,640	0.4
FeC2	Faywood-Cynthiana complex, 6 to 12 percent slopes, eroded, rocky	4,150	464	4,614	1.3
FeD2	Faywood-Cynthiana complex, 12 to 25 percent slopes, eroded, very rocky	15,450	9,602	25,052	6.9
FfC2	Faywood-Fairmount complex, phosphatic, 6 to 12 percent slopes, eroded, rocky	2,760	70	2,830	0.8
FfD2	Faywood-Fairmount complex, phosphatic, 12 to 25 percent slopes, eroded, very rocky	4,490	150	4,640	1.3
FoD2	Faywood-Shrouts complex, 12 to 25 percent slopes, eroded, rocky	530	1,955	2,485	0.7
FoF2	Faywood-Shrouts complex, 25 to 60 percent slopes, eroded, rocky	535	1,029	1,564	0.4

See footnote at end of table.

Table 4.—Acreage and Proportionate Extent of the Soils—Continued

Map symbol	Soil name	Garrard County	Lincoln County	Total Area	Total Extent
		Acres	Acres	Acres	Pct
FrB	Frankstown gravelly silt loam, 2 to 6 percent slopes	0	1,292	1,292	0.4
FrC	Frankstown gravelly silt loam, 6 to 12 percent slopes	30	10,004	10,034	2.7
FrD2	Frankstown gravelly silt loam, 12 to 25 percent slopes, eroded	0	13,073	13,073	3.6
GaC2	Garlin-Shrouts complex, 6 to 12 percent slopes, eroded	1,405	5,548	6,953	1.9
GaD2	Garlin-Shrouts complex, 12 to 25 percent slopes, eroded, rocky	2,250	4,749	6,999	1.9
GmF	Garmon channery silt loam, 25 to 80 percent slopes, rocky	5,465	23,141	28,606	7.8
GnB	Gilpin silt loam, 2 to 6 percent slopes	220	54	274	*
GnC2	Gilpin silt loam, 6 to 12 percent slopes, eroded	725	252	977	0.3
GrB	Greenbriar silt loam, 2 to 6 percent slopes	212	870	1,082	0.3
HgC	Hagerstown silt loam, 6 to 12 percent slopes	275	1,826	2,101	0.6
JeB	Jessietown silt loam, 2 to 6 percent slopes	295	935	1,230	0.3
JeC	Jessietown silt loam, 6 to 12 percent slopes	80	312	392	0.1
Jm	Johnsburg-Mullins complex	260	1,208	1,468	0.4
Jr	Johnsburg-Robertsville complex	0	2,258	2,258	0.6
La	Lawrence silt loam, terrace, rarely flooded	65	734	799	0.2
Le	Lawrence-Robertsville complex	293	625	918	0.3
LgC2	Lenberg silty clay loam, 6 to 12 percent slopes, eroded	625	340	965	0.3
LlB	Lily loam, 2 to 6 percent slopes	0	102	102	*
LlC	Lily loam, 6 to 12 percent slopes	0	716	716	0.2
LoB	Lowell silt loam, 2 to 6 percent slopes	4,830	1,930	6,760	1.9
LoC2	Lowell silt loam, 6 to 12 percent slopes, eroded	15,056	10,125	25,181	6.9
LpD2	Lowell-Faywood complex, 12 to 25 percent slopes, eroded, rocky	1,720	9,310	11,030	3.0
LsB	Lowell silt loam, phosphatic, 2 to 6 percent slopes	553	0	553	0.2
LsC2	Lowell silt loam, phosphatic, 6 to 12 percent slopes, eroded	2,696	185	2,881	0.8
LtD2	Lowell-Faywood complex, phosphatic, 12 to 25 percent slopes, eroded	655	111	766	0.2
Me	Melvin silt loam, frequently flooded	70	1,571	1,641	0.4
MoB	Monongahela loam, 2 to 6 percent slopes	160	24	184	*
Ne	Newark silt loam, frequently flooded	1,213	5,209	6,422	1.8
NhB	Nicholson silt loam, 2 to 6 percent slopes	2,615	1,529	4,144	1.1
NhC2	Nicholson silt loam, 6 to 12 percent slopes, eroded	590	231	821	0.2
No	Nolin silt loam, frequently flooded	4,693	5,816	10,509	2.9
OtB	Otwell silt loam, 2 to 6 percent slopes	90	2,242	2,332	0.6
OwB	Otwell silt loam, 2 to 6 percent slopes, rarely flooded	565	1,656	2,221	0.6
PrB	Pricetown silt loam, 2 to 6 percent slopes	0	6,984	6,984	1.9
PrC	Pricetown silt loam, 6 to 12 percent slopes	0	724	724	0.2
Rb	Robertsville silt loam, terrace, rarely flooded	60	161	221	*
RoF	Rock outcrop-Fairmount complex, 50 to 120 percent slopes	2,300	114	2,414	0.7
SaB	Sandview silt loam, 2 to 6 percent slopes	1,335	2,052	3,387	0.9
SaC	Sandview silt loam, 6 to 12 percent slopes	415	703	1,118	0.3
SdB	Sandview silt loam, phosphatic, 2 to 6 percent slopes	5,291	205	5,496	1.5
SdC	Sandview silt loam, phosphatic, 6 to 12 percent slopes	1,290	292	1,582	0.4
SeC2	Shrouts silty clay loam, 6 to 12 percent slopes, eroded	2,240	4,338	6,578	1.8
SfD3	Shrouts-Cynthiana complex, 12 to 25 percent slopes, severely eroded, rocky	6,190	5,259	11,449	3.1

See footnote at end of table.

Table 4.—Acreage and Proportionate Extent of the Soils—Continued

Map symbol	Soil name	Garrard County	Lincoln County	Total Area	Total Extent
		Acres	Acres	Acres	Pct
SgF3	Shrouts-Garlin-Cynthiana complex, 25 to 50 percent slopes, severely eroded, very rocky	1,215	499	1,714	0.5
Sk	Skidmore very gravelly silt loam, frequently flooded	50	804	854	0.2
TeB	Teddy silt loam, 2 to 6 percent slopes	0	5,201	5,201	1.4
TlB	Tilsit silt loam, 2 to 6 percent slopes	610	4,970	5,580	1.5
TlC	Tilsit silt loam, 6 to 12 percent slopes	136	466	602	0.2
TpB	Trappist silt loam, 2 to 6 percent slopes	422	894	1,316	0.4
TpC2	Trappist silty clay loam, 6 to 12 percent slopes, eroded	695	1,943	2,638	0.7
TrD2	Trappist-Colyer complex, 12 to 25 percent slopes, eroded	1,650	4,015	5,665	1.6
W	Water	1,024	60	1,084	0.3
Yo	Yosemite gravelly silt loam, frequently flooded				
	Total	149,728	215,482	365,210	100.0

* Less than 0.1 percent.

Table 5.—Land Capability and Yields per Acre of Crops

(Yields are those that can be expected under a high level of management. They are for nonirrigated areas. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Map symbol and soil name	Land capability	Corn	Soybeans	Tobacco	Wheat
		Bu	Bu	Lbs	Bu
AlB:					
Allegheny	2e	115.00	35.00	2,800.00	45.00
AlC2:					
Allegheny	3e	105.00	30.00	2,700.00	40.00
BaB:					
Beasley	2e	105.00	35.00	2,800.00	40.00
BbC2:					
Beasley	3e	90.00	30.00	2,400.00	35.00
BeB:					
Berea	2e	100.00	35.00	2,600.00	35.00
Bo:					
Boonesboro	2w	100.00	35.00	2,800.00	---
CaE2:					
Caneyville	6s	---	---	---	---
CeB:					
Carpenter	2e	110.00	35.00	2,650.00	35.00
CeC:					
Carpenter	3e	100.00	30.00	2,300.00	30.00
CgE2:					
Carpenter-Lenberg	6e	---	---	---	---
ChB:					
Chenault	2e	115.00	35.00	3,000.00	40.00
ChC:					
Chenault	3e	110.00	35.00	2,600.00	35.00
CkC:					
Chenault-Lowell	3e	115.00	35.00	3,000.00	35.00
ClD2:					
Chenault-Faywood	4s	75.00	---	1,900.00	20.00
CmB:					
Christian	2e	110.00	35.00	2,500.00	40.00
CmC2:					
Christian	3e	85.00	30.00	2,300.00	35.00
CoD2:					
Christian	4e	70.00	---	2,000.00	30.00
CpF2:					
Colyer-Trappist	7s	---	---	---	---

Table 5.—Land Capability and Yields per Acre of Crops—Continued

Map symbol and soil name	Land capability	Corn	Soybeans	Tobacco	Wheat
		Bu	Bu	Lbs	Bu
CrB:					
Crider	2e	125.00	45.00	3,200.00	40.00
CrC:					
Crider	3e	110.00	35.00	3,000.00	30.00
CuB:					
Culleoka	2e	110.00	40.00	2,800.00	45.00
CuC2:					
Culleoka	3e	100.00	30.00	2,600.00	45.00
CuD2:					
Culleoka	4e	80.00	25.00	2,000.00	35.00
CyF2:					
Cynthiana-Faywood	7s	---	---	---	---
DAM.					
Dam					
DoB:					
Donerail	2e	110.00	40.00	2,400.00	40.00
EdD2:					
Eden	4e	---	---	---	20.00
EfF2:					
Eden-Culleoka	7e	---	---	---	---
EkB:					
Elk	2e	115.00	40.00	3,000.00	45.00
EkC:					
Elk	3e	100.00	35.00	2,600.00	40.00
EmB:					
Elk	2e	115.00	40.00	3,000.00	45.00
FaC2:					
Fairmount	6s	---	---	---	---
FdF2:		---	---	---	---
Fairmount	7s				
Faywood	7s				
Rock outcrop	8				
FeC2:		---	---	---	---
Faywood	4s				
Cynthiana	6s				
FeD2:					
Faywood-Cynthiana	6s	---	---	---	---
FfC2:		---	---	---	---
Faywood	4s				
Fairmount	6s				

Table 5.—Land Capability and Yields per Acre of Crops—Continued

Map symbol and soil name	Land capability	Corn	Soybeans	Tobacco	Wheat
		Bu	Bu	Lbs	Bu
FfD2:					
Faywood-Fairmount	6s	---	---	---	---
FoD2:					
Faywood-Shrouts	6s	---	---	---	---
FoF2:					
Faywood-Shrouts	7s	---	---	---	---
FrB:					
Frankstown	2e	95.00	30.00	2,400.00	35.00
FrC:					
Frankstown	3e	85.00	25.00	2,200.00	30.00
FrD2:					
Frankstown	4e	70.00	---	1,800.00	25.00
GaC2:		---	---	---	---
Garlin	6e				
Shrouts	4e				
GaD2:		---	---	---	---
Garlin	7e				
Shrouts	6e				
GmF:					
Garmon	7e	---	---	---	---
GnB:					
Gilpin	2e	90.00	---	2,200.00	40.00
GnC2:					
Gilpin	3e	85.00	---	2,000.00	35.00
GrB:					
Greenbriar	2e	105.00	35.00	2,900.00	40.00
HgC:					
Hagerstown	3e	100.00	35.00	2,800.00	40.00
JeB:					
Jessietown	2e	90.00	30.00	2,600.00	35.00
JeC:					
Jessietown	3e	85.00	25.00	2,400.00	30.00
Jm:		80.00	30.00	---	---
Johnsburg	3w				
Mullins	4w				
Jr:		80.00	30.00	---	---
Johnsburg	3w				
Robertsville	4w				
La:					
Lawrence	3w	85.00	30.00	1,800.00	30.00

Table 5.—Land Capability and Yields per Acre of Crops—Continued

Map symbol and soil name	Land capability	Corn	Soybeans	Tobacco	Wheat
		Bu	Bu	Lbs	Bu
Le:		70.00	30.00	---	---
Lawrence	3w				
Robertsville	4w				
LgC2:					
Lenberg	3e	70.00	20.00	1,500.00	25.00
LlB:					
Lily	2e	95.00	25.00	2,400.00	30.00
LlC:					
Lily	3e	80.00	20.00	2,000.00	25.00
LoB:					
Lowell	2e	110.00	35.00	2,800.00	40.00
LoC2:					
Lowell	3e	95.00	30.00	2,400.00	35.00
LpD2:					
Lowell-Faywood	4e	75.00	---	1,900.00	30.00
LsB:					
Lowell	2e	110.00	35.00	2,800.00	40.00
LsC2:					
Lowell	3e	95.00	30.00	2,400.00	35.00
LtD2:					
Lowell-Faywood	4e	75.00	---	1,900.00	30.00
Me:					
Melvin	4w	75.00	30.00	---	---
MoB:					
Monongahela	2e	100.00	35.00	2,400.00	40.00
Ne:					
Newark	3w	95.00	35.00	---	---
NhB:					
Nicholson	2e	115.00	40.00	3,000.00	45.00
NhC2:					
Nicholson	3e	95.00	35.00	2,700.00	40.00
No:					
Nolin	2w	135.00	40.00	3,000.00	---
OtB, OwB:					
Otwell	2e	115.00	40.00	3,000.00	40.00
PrB:					
Pricetown	2e	115.00	45.00	3,200.00	50.00
PrC:					
Pricetown	3e	100.00	35.00	2,900.00	45.00
Rb:					
Robertsville	4w	70.00	30.00	---	---

Table 5.—Land Capability and Yields per Acre of Crops—Continued

Map symbol and soil name	Land capability	Corn	Soybeans	Tobacco	Wheat
		Bu	Bu	Lbs	Bu
RoF:		---	---	---	---
Rock outcrop	8				
Fairmount	7s				
SaB:					
Sandview	2e	125.00	45.00	3,200.00	50.00
SaC:					
Sandview	3e	115.00	40.00	3,000.00	45.00
SdB:					
Sandview	2e	125.00	45.00	3,200.00	50.00
SdC:					
Sandview	3e	115.00	40.00	3,000.00	45.00
SeC2:					
Shrouts	4e	70.00	25.00	1,800.00	30.00
SfD3:					
Shrouts-Cynthiana	6s	---	---	---	---
SgF3:					
Shrouts-Garlin-Cynthiana	7s	---	---	---	---
Sk:					
Skidmore	2w	80.00	30.00	2,500.00	---
TeB:					
Teddy	2e	100.00	35.00	2,500.00	40.00
TlB:					
Tilsit	2e	100.00	35.00	2,500.00	40.00
TlC:		90.00	25.00	2,200.00	30.00
Tilsit	3e				
TpB:					
Trappist	2e	80.00	35.00	2,500.00	35.00
TpC2:					
Trappist	3e	70.00	30.00	2,200.00	30.00
TrD2:					
Trappist-Colyer	6s	---	---	---	---
W.					
Water					
Yo:					
Yosemite	2w	100.00	30.00	2,250.00	---

Table 6.—Land Capability and Yields per Acre of Hay and Pasture

(Yields are those that can be expected under a high level of management. They are for nonirrigated areas. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Map symbol and soil name	Land capability	Alfalfa hay	Grass-legume hay	Pasture
		Tons	Tons	AUM
AlB:				
Allegheny	2e	5.00	4.50	8.00
AlC2:				
Allegheny	3e	4.50	4.00	7.00
BaB:				
Beasley	2e	3.00	4.00	7.50
BbC2:				
Beasley	3e	3.00	3.00	7.00
BeB:				
Berea	2e	---	4.00	8.00
Bo:				
Boonesboro	2w	---	3.00	6.00
CaE2:				
Caneyville	6s	---	---	4.00
CeB:				
Carpenter	2e	3.50	4.00	7.50
CeC:				
Carpenter	3e	3.00	3.50	7.00
CgE2:				
Carpenter-Lenberg	6e	---	2.00	4.00
ChB:				
Chenault	2e	4.00	3.50	7.00
ChC:				
Chenault	3e	3.50	3.00	7.00
CkC:				
Chenault-Lowell	3e	3.50	3.00	7.00
ClD2:				
Chenault-Faywood	4s	2.50	1.50	4.50
CmB:				
Christian	2e	4.50	4.00	8.00
CmC2:				
Christian	3e	4.00	3.50	7.00
CoD2:				
Christian	4e	3.50	3.00	6.00
CpF2:				
Colyer-Trappist	7s	---	---	---

Table 6.—Land Capability and Yields per Acre of Hay and Pasture—Continued

Map symbol and soil name	Land capability	Alfalfa hay	Grass-legume hay	Pasture
		Tons	Tons	AUM
CrB:				
Crider	2e	5.50	5.50	9.00
CrC:				
Crider	3e	5.00	5.00	8.00
CuB:				
Culleoka	2e	4.50	4.00	7.50
CuC2:				
Culleoka	3e	4.00	3.50	6.50
CuD2:				
Culleoka	4e	3.50	3.00	6.00
CyF2:				
Cynthiana-Faywood	7s	---	---	---
DAM.				
Dam				
DoB:				
Donerail	2e	---	5.00	8.00
EdD2:				
Eden	4e	---	2.50	5.00
EfF2:				
Eden-Culleoka	7e	---	---	---
EkB:				
Elk	2e	5.00	4.50	8.50
EkC:				
Elk	3e	4.50	4.00	7.50
EmB:				
Elk	2e	5.00	4.50	8.50
FaC2:				
Fairmount	6s	---	2.50	3.50
FdF2:		---	---	---
Fairmount	7s			
Faywood	7s			
Rock outcrop	8			
FeC2:		---	2.50	4.00
Faywood	4s			
Cynthiana	6s			
FeD2:				
Faywood-Cynthiana	6s	---	---	3.50
FfC2:		---	2.50	4.00
Faywood	4s			
Fairmount	6s			
FfD2:				
Faywood-Fairmount	6s	---	---	3.50

Table 6.—Land Capability and Yields per Acre of Hay and Pasture—Continued

Map symbol and soil name	Land capability	Alfalfa hay	Grass-legume hay	Pasture
		Tons	Tons	AUM
FoD2:				
Faywood-Shrouts	6s	---	2.00	4.00
FoF2:				
Faywood-Shrouts	7s	---	---	---
FrB:				
Frankstown	2e	4.00	4.00	7.00
FrC:				
Frankstown	3e	3.50	3.50	6.50
FrD2:				
Frankstown	4e	3.00	3.00	5.50
GaC2:		---	2.50	4.50
Garlin	6e			
Shrouts	4e			
GaD2:		---	---	3.50
Garlin	7e			
Shrouts	6e			
GmF:				
Garmon	7e	---	---	---
GnB:				
Gilpin	2e	3.00	3.00	6.50
GnC2:				
Gilpin	3e	3.00	3.00	6.50
GrB:				
Greenbriar	2e	4.50	4.00	8.00
HgC:				
Hagerstown	3e	4.00	4.00	7.50
JeB:				
Jessietown	2e	4.50	3.50	7.00
JeC:				
Jessietown	3e	4.00	3.50	6.50
Jm:		---	3.00	5.50
Johnsburg	3w			
Mullins	4w			
Jr:		---	3.00	5.50
Johnsburg	3w			
Robertsville	4w			
La:				
Lawrence	3w	---	3.00	6.00
Le:		---	3.00	5.50
Lawrence	3w			
Robertsville	4w			
LgC2:				
Lenberg	3e	3.50	2.50	5.00

Table 6.—Land Capability and Yields per Acre of Hay and Pasture—Continued

Map symbol and soil name	Land capability	Alfalfa hay	Grass-legume hay	Pasture
		Tons	Tons	AUM
LlB:				
Lily	2e	4.00	3.50	7.00
LlC:				
Lily	3e	3.50	3.00	6.00
LoB:				
Lowell	2e	4.50	4.00	8.00
LoC2:				
Lowell	3e	4.00	3.50	7.00
LpD2:				
Lowell-Faywood	4e	3.50	3.00	5.00
LsB:				
Lowell	2e	4.50	4.00	8.00
LsC2:				
Lowell	3e	4.00	3.50	7.00
LtD2:				
Lowell-Faywood	4e	3.50	3.00	5.00
Me:				
Melvin	4w	---	3.00	6.50
MoB:				
Monongahela	2e	---	3.00	8.00
Ne:				
Newark	3w	---	4.00	8.50
NhB:				
Nicholson	2e	---	3.50	8.00
NhC2:				
Nicholson	3e	---	3.00	7.00
No:				
Nolin	2w	---	3.50	9.00
OtB, OwB:				
Otwell	2e	---	4.00	8.00
PrB:				
Pricetown	2e	5.00	5.00	9.00
PrC:				
Pricetown	3e	4.50	4.50	8.00
Rb:				
Robertsville	4w	---	3.00	5.50
RoF:		---	---	---
Rock outcrop	8			
Fairmount	7s			
SaB:				
Sandview	2e	5.00	4.50	9.00

Table 6.—Land Capability and Yields per Acre of Hay and Pasture—Continued

Map symbol and soil name	Land capability	Alfalfa hay	Grass-legume hay	Pasture
		Tons	Tons	AUM
SaC:				
Sandview	3e	4.50	4.00	8.00
SdB:				
Sandview	2e	5.00	4.50	9.00
SdC:				
Sandview	3e	4.50	4.00	8.00
SeC2:				
Shrouts	4e	3.50	3.00	5.00
SfD3:				
Shrouts-Cynthiana	6s	---	---	4.00
SgF3:				
Shrouts-Garlin-Cynthiana	7s	---	---	---
Sk:				
Skidmore	2w	---	3.00	5.50
TeB:				
Teddy	2e	---	3.50	8.00
TlB:				
Tilsit	2e	---	3.50	7.00
TlC:				
Tilsit	3e	---	3.00	6.50
TpB:				
Trappist	2e	4.00	3.50	6.50
TpC2:				
Trappist	3e	3.00	3.00	6.20
TrD2:				
Trappist-Colyer	6s	---	2.00	4.50
W.				
Water				
Yo:				
Yosemite	2w	---	4.00	8.00

Table 7.—Woodland Management and Productivity

Map symbol and soil name	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Volume of wood fiber	S
							cu ft/ac	
AlB, AlC2:								
Allegheny	Slight	Slight	Slight	Severe	Virginia pine	72	112.00	Vi
					Black oak	78	60.00	bl
					Shortleaf pine	80	130.00	sh
					White oak	70	52.00	wh
					Yellow-poplar	93	95.00	po
BaB, BbC2:								
Beasley	Moderate	Moderate	Slight	Severe	Chinkapin oak	58	41.00	Ch
					Eastern redcedar	41	44.00	ea
					White ash	63	---	wh
					White oak	65	47.00	oa
					Yellow-poplar	80	71.00	
BeB:								
Berea	Slight	Slight	Slight	Severe	Virginia pine	70	100.00	Ea
					Black oak	70	52.00	sh
					Hickory	---	---	sw
					Scarlet oak	---	---	a
					Sugar maple	---	---	y
					White oak	70	52.00	
					Yellow-poplar	---	---	
Bo:								
Boonesboro	Slight	Slight	Moderate	Severe	American elm	---	---	Ea
					American sycamore	---	---	s
					Common hackberry	---	---	a
					Sweetgum	---	---	
					White ash	---	---	
					Yellow-poplar	95	90.00	
CaE2:								
Caneyville	Severe	Moderate	Moderate	Severe	Black oak	65	47.00	Vi
					Chinkapin oak	44	29.00	e
					Eastern redcedar	36	38.00	w
					Hickory	---	---	
					Scarlet oak	50	34.00	
					Sugar maple	---	---	
					White oak	60	43.00	

Table 7.—Woodland Management and Productivity—Continued

Map symbol and soil name	Management concerns				Potential productivity		
	Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Common trees	Site index	Volume of wood fiber
							cu ft/ac
CeB, CeC:							
Carpenter	Slight	Slight	Slight	Severe	Virginia pine	74	114.00
					Black oak	74	57.00
					Chestnut oak	70	52.00
					Hickory	---	---
					Northern red oak	71	53.00
					Scarlet oak	75	57.00
					White oak	71	53.00
CgE2:							
Carpenter	Moderate	Moderate	Moderate	Severe	Virginia pine	61	93.00
					Black oak	60	43.00
					Chestnut oak	56	39.00
					Hickory	---	---
					Post oak	46	31.00
					Scarlet oak	66	48.00
					White oak	62	45.00
Lenberg	Severe	Severe	Slight	Moderate	Virginia pine	61	93.00
					Black oak	60	43.00
					Chestnut oak	56	39.00
					Hickory	---	---
					Post oak	46	31.00
					Scarlet oak	66	48.00
					White oak	62	45.00
ChB, ChC:							
Chenault	Slight	Slight	Slight	Severe	American sycamore	---	---
					Black oak	---	---
					Black walnut	---	---
					Hickory	---	---
					Northern red oak	80	---
					Sugar maple	---	---
					White oak	---	---
					Yellow-poplar	90	90.00
CkC:							
Chenault	Slight	Slight	Slight	Severe	American sycamore	---	---
					Black oak	---	---
					Black walnut	---	---
					Hickory	---	---
					Northern red oak	80	---
					Sugar maple	---	---
					White oak	---	---
					Yellow-poplar	90	90.00

Table 7.—Woodland Management and Productivity—Continued

Map symbol and soil name	Management concerns				Potential productivity			
	Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Common trees	Site index	Volume of wood fiber	S
							cu ft/ac	
CkC:								
Lowell	Slight	Slight	Slight	Severe	American sycamore	---	---	Ea
					Black oak	---	---	no
					Black walnut	---	---	wh
					Hickory	---	---	po
					Northern red oak	80	---	
					Sugar maple	---	---	
					White oak	---	---	
					Yellow-poplar	90	90.00	
ClD2:								
Chenault	Slight	Slight	Slight	Severe	American sycamore	---	---	Bl
					Black oak	---	---	ea
					Black walnut	---	---	pi
					Hickory	---	---	oa
					Northern red oak	80	---	pi
					Sugar maple	---	---	ye
					White oak	---	---	
					Yellow-poplar	90	90.00	
Faywood	Moderate	Moderate	Slight	Moderate	American sycamore	---	---	Ea
					Black oak	---	---	no
					Black walnut	---	---	wh
					Hickory	---	---	oa
					Northern red oak	80	---	
					Sugar maple	---	---	
					White oak	---	---	
					Yellow-poplar	90	90.00	
CmB, CmC2:								
Christian	Slight	Slight	Slight	Severe	Virginia pine	74	114.00	Ea
					Black oak	77	59.00	no
					Black walnut	---	---	sh
					Eastern redcedar	41	44.00	wh
					Hickory	---	---	po
					White oak	70	52.00	
					Yellow-poplar	87	84.00	
CoD2:								
Christian	Moderate	Moderate	Slight	Slight	Virginia pine	74	114.00	Vi
					Black oak	77	59.00	ea
					Black walnut	---	---	wh
					Eastern redcedar	41	44.00	
					Hickory	---	---	
					White oak	70	52.00	
					Yellow-poplar	87	84.00	

Table 7.—Woodland Management and Productivity—Continued

Map symbol and soil name	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Potential productivity: Common trees	Site index	Volume of wood fiber	S
							cu ft/ac	
CpF2:								
Colyer	Severe	Severe	Severe	Slight	Virginia pine	52	73.00	Vi
					Chestnut oak	51	35.00	s
					Pitch pine	48	---	
					Scarlet oak	53	37.00	
					Shortleaf pine	50	68.00	
					White oak	52	36.00	
Trappist	Severe	Severe	Slight	Moderate	Virginia pine	52	73.00	Vi
					Chestnut oak	51	35.00	w
					Pitch pine	48	---	
					Scarlet oak	53	37.00	
					Shortleaf pine	50	68.00	
					White oak	52	36.00	
CrB, CrC:								
Crider	Slight	Slight	Slight	Severe	Black oak	87	72.00	bl
					Black walnut	80	---	e
					Hickory	---	---	p
					Northern red oak	84	72.00	o
					Sugar maple	---	---	p
					White ash	---	---	w
					White oak	72	57.00	p
					Yellow-poplar	97	100.00	
CuB, CuC2:								
Culleoka	Slight	Slight	Slight	Severe	Black cherry	---	---	Ea
					Black oak	82	57.00	n
					Black walnut	---	---	s
					Northern red oak	81	63.00	w
					Sugar maple	---	---	o
					White ash	---	---	
					White oak	---	---	
					Yellow-poplar	105	115.00	
CuD2:								
Culleoka	Moderate	Moderate	Slight	Severe	Black cherry	---	---	Ea
					Black oak	82	57.00	n
					Black walnut	---	---	s
					Northern red oak	81	63.00	w
					Sugar maple	---	---	o
					White ash	---	---	
					White oak	---	---	
					Yellow-poplar	105	115.00	

Table 7.—Woodland Management and Productivity—Continued

Map symbol and soil name	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Volume of wood fiber (cu ft/ac)	
CyF2:								
Cynthiana	Severe	Severe	Moderate	Moderate	American elm	---	---	Vi
					Black cherry	---	---	e
					Black locust	---	---	w
					Black walnut	71	---	o
					Chinkapin oak	---	---	
					Common hackberry	---	---	
					Eastern redcedar	42	46.00	
					Honeylocust	---	---	
					White ash	75	---	
CyF2:								
Faywood	Moderate	Moderate	Slight	Moderate	American elm	---	---	Vi
					Black cherry	---	---	e
					Black locust	---	---	n
					Black walnut	71	---	w
					Chinkapin oak	---	---	
					Common hackberry	---	---	
					Eastern redcedar	42	46.00	
					Honeylocust	---	---	
					White ash	75	---	
DAM.								
Dam								
DoB:								
Donerail	Slight	Slight	Slight	Severe	American elm	---	---	Ea
					Black locust	---	---	n
					Black oak	80	62.00	s
					Black walnut	---	---	w
					Common hackberry	---	---	o
					Northern red oak	80	62.00	
					Southern red oak	80	62.00	
					White ash	---	---	
					White oak	80	62.00	
EdD2:								
Eden	Moderate	Moderate	Moderate	Moderate	Black oak	68	57.00	Ea
					Eastern redcedar	41	44.00	w
					Scarlet oak	70	52.00	o
					White ash	60	---	
					White oak	61	---	

Table 7.—Woodland Management and Productivity—Continued

Map symbol and soil name	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Volume of wood fiber	
							cu ft/ac	
EfF2:								
Eden	Severe	Severe	Moderate	Moderate	Black oak	68	57.00	Ea
					Eastern redcedar	41	44.00	w
					Scarlet oak	70	52.00	o
					White ash	60	---	
					White oak	61	---	
Culleoka	Severe	Severe	Slight	Severe	Black oak	68	57.00	Ea
					Eastern redcedar	41	44.00	s
					Scarlet oak	70	52.00	w
					White ash	60	---	o
					White oak	61	---	
EkB, EkC, EmB:								
Elk	Slight	Slight	Slight	Severe	American sycamore	---	---	Bl
					Black walnut	---	---	e
					Common hackberry	---	---	p
					Pin oak	96	93.00	o
					Red maple	---	---	p
					Sweetgum	98	---	y
					Yellow-poplar	91	92.00	
FaC2:								
Fairmount	Slight	Moderate	Severe	Moderate	Black oak	65	47.00	Vi
					Chinkapin oak	---	---	w
					Eastern redcedar	41	44.00	o
					Hickory	---	---	
					Scarlet oak	60	43.00	
FdF2:								
Fairmount	Severe	Severe	Moderate	Moderate	Black oak	65	47.00	Vi
					Chinkapin oak	---	---	w
					Eastern redcedar	41	44.00	
					Hickory	---	---	
					Scarlet oak	60	43.00	
Faywood	Moderate	Moderate	Slight	Moderate	Black oak	65	47.00	Ea
					Chinkapin oak	---	---	n
					Eastern redcedar	41	44.00	w
					Hickory	---	---	
					Scarlet oak	60	43.00	
Rock outcrop.								

Table 7.—Woodland Management and Productivity—Continued

Map symbol and soil name	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Volume of wood fiber	S
							cu ft/ac	
FeC2:								
Faywood----------------	Slight	Moderate	Moderate	Moderate	Chinkapin oak-------	---	---	Ea
					Northern red oak----	70	52.00	no
					Scarlet oak---------	72	54.00	wh
					Southern red oak----	---	---	
					Sugar maple---------	---	---	
					White oak-----------	60	43.00	
Cynthiana--------------	Slight	Moderate	Moderate	Moderate	Chinkapin oak-------	---	---	Vi
					Northern red oak----	70	52.00	ea
					Scarlet oak---------	72	54.00	wh
					Southern red oak----	---	---	oa
					Sugar maple---------	---	---	
					White oak-----------	60	43.00	
FeD2:								
Faywood----------------	Moderate	Moderate	Slight	Moderate	Chinkapin oak-------	---	---	Ea
					Hickory-------------	---	---	no
					Northern red oak----	70	57.00	wh
					Scarlet oak---------	72	57.00	
					Southern red oak----	---	---	
					Sugar maple---------	---	---	
					White ash-----------	---	---	
Cynthiana--------------	Moderate	Moderate	Moderate	Moderate	American elm--------	---	---	Vi
					Black cherry--------	---	---	ea
					Black locust--------	---	---	wh
					Black walnut--------	71	---	oa
					Chinkapin oak-------	---	---	
					Common hackberry----	---	---	
					Eastern redcedar----	42	46.00	
					Honeylocust---------	---	---	
					White ash-----------	75	---	
FfC2:								
Faywood----------------	Slight	Moderate	Slight	Moderate	Chinkapin oak-------	---	---	Ea
					Northern red oak----	70	52.00	no
					Scarlet oak---------	72	54.00	wh
					Southern red oak----	---	---	
					Sugar maple---------	---	---	
					White oak-----------	60	43.00	

Table 7.--Woodland Management and Productivity--Continued

Map symbol and soil name	Management concerns				Potential productivity			S
	Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Common trees	Site index	Volume of wood fiber	
							cu ft/ac	
FfC2:								
Fairmount	Slight	Moderate	Severe	Moderate	Black oak	65	47.00	Vi
					Chinkapin oak	---	---	ea
					Eastern redcedar	41	44.00	wh
					Hickory	---	---	
					Scarlet oak	---	---	
FfD2:								
Faywood	Moderate	Moderate	Slight	Moderate	Chinkapin oak	---	---	Ea
					Northern red oak	70	52.00	no
					Scarlet oak	72	54.00	wh
					Southern red oak	---	---	
					Sugar maple	---	---	
					White oak	60	43.00	
Fairmount	Moderate	Moderate	Severe	Moderate	Black locust	---	---	Vi
					Black oak	65	47.00	no
					Black walnut	---	---	wh
					Chinkapin oak	---	---	oa
					Eastern redcedar	41	44.00	
					Scarlet oak	60	43.00	
					White ash	---	---	
FoD2:								
Faywood	Moderate	Moderate	Slight	Moderate	Chinkapin oak	---	---	Ea
					Northern red oak	70	52.00	no
					Scarlet oak	72	54.00	wh
					Southern red oak	---	---	
					Sugar maple	---	---	
					White oak	60	43.00	
Shrouts	Moderate	Moderate	Moderate	Moderate	Virginia pine	60	91.00	Vi
					Black oak	60	43.00	ea
					Eastern redcedar	45	43.00	wh
					Scarlet oak	60	43.00	
					White oak	---	52.00	
FoF2:								
Faywood	Severe	Severe	Slight	Moderate	Chinkapin oak	---	---	Ea
					Northern red oak	70	52.00	no
					Scarlet oak	72	54.00	wh
					Southern red oak	---	---	
					Sugar maple	---	---	
					White oak	60	43.00	

Table 7.—Woodland Management and Productivity—Continued

Map symbol and soil name	Management concerns				Potential productivity			S
	Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Common trees	Site index	Volume of wood fiber	
							cu ft/ac	
FoF2:								
Shrouts----------------	Severe	Severe	Moderate	Moderate	Virginia pine-------	60	91.00	Vi
					Black oak-----------	60	43.00	ea
					Eastern redcedar----	45	43.00	wh
					Scarlet oak---------	60	43.00	
					White oak-----------	---	52.00	
FrB, FrC:								
Frankstown-------------	Slight	Slight	Slight	Moderate	Virginia pine-------	80	127.00	Ea
					Black walnut--------	---	---	no
					Northern red oak----	79	61.00	sh
					Shortleaf pine------	80	130.00	wh
					White oak-----------	80	62.00	oa
					Yellow-poplar-------	85	81.00	
FrD2:								
Frankstown-------------	Moderate	Moderate	Slight	Moderate	Virginia pine-------	80	127.00	Ea
					Black walnut--------	---	---	no
					Northern red oak----	79	61.00	sh
					Shortleaf pine------	80	130.00	wh
					White oak-----------	80	62.00	oa
					Yellow-poplar-------	85	81.00	
GaC2:								
Garlin-----------------	Moderate	Slight	Slight	Severe	American elm--------	---	---	Vi
					Black locust--------	---	---	ea
					Common hackberry----	---	---	wh
					Eastern redcedar----	40	43.00	
					Scarlet oak---------	60	43.00	
					White ash-----------	---	---	
Shrouts----------------	Slight	Moderate	Moderate	Moderate	Virginia pine-------	60	91.00	Vi
					Black oak-----------	60	43.00	ea
					Eastern redcedar----	45	52.00	wh
					Scarlet oak---------	60	43.00	
					White oak-----------	---	---	
GaD2:								
Garlin-----------------	Moderate	Slight	Slight	Severe	American elm--------	---	---	Vi
					Black locust--------	---	---	ea
					Common hackberry----	---	---	wh
					Eastern redcedar----	40	43.00	
					Scarlet oak---------	60	43.00	
					White ash-----------	---	---	

Table 7.—Woodland Management and Productivity—Continued

Map symbol and soil name	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Potential productivity: Common trees	Site index	Volume of wood fiber
							cu ft/ac
GaD2:							
Shrouts	Moderate	Moderate	Moderate	Moderate	Virginia pine	60	91.00
					Black oak	60	43.00
					Eastern redcedar	45	52.00
					Scarlet oak	60	43.00
					White oak	---	---
GmF:							
Garmon	Severe	Severe	Slight	Moderate	Chestnut oak	65	47.00
					Hickory	---	---
					Sugar maple	---	---
					White oak	75	57.00
					Yellow-poplar	99	105.00
					Northern red oak	72	54.00
GnB, GnC2:							
Gilpin	Slight	Slight	Slight	Moderate	Black oak	80	62.00
					Eastern white pine	96	128.00
					Northern red oak	87	69.00
					Shortleaf pine	70	110.00
					White oak	75	57.00
					Yellow-poplar	90	90.00
GrB:							
Greenbriar	Slight	Slight	Slight	Severe	Virginia pine	69	107.00
					Chestnut oak	---	---
					Hickory	---	---
					Post oak	---	---
					Red maple	---	---
					Shortleaf pine	72	114.00
					White oak	---	---
HgC:							
Hagerstown	Slight	Moderate	Slight	Severe	Hickory	---	---
					Northern red oak	85	67.00
					Yellow-poplar	95	98.00
JeB, JeC:							
Jessietown	Slight	Moderate	Slight	Severe	Virginia pine	62	95.00
					Black oak	62	45.00
					Chestnut oak	58	41.00
					Eastern redcedar	---	---
					Hickory	---	---
					Red maple	---	---
					White oak	60	43.00

Table 7.--Woodland Management and Productivity--Continued

Map symbol and soil name	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Volume of wood fiber	S
							cu ft/ac	
Jm:								
Johnsburg-------------	Slight	Moderate	Slight	Severe	Hickory------------	---	---	Sw
					Pin oak------------	---	---	oa
					Red maple----------	---	---	
					Sweetgum-----------	---	---	
					White ash----------	---	---	
					White oak----------	73	55.00	
					Yellow-poplar-------	94	97.00	
Mullins---------------	Slight	Moderate	Severe	Severe	Black oak----------	72	57.00	Gr
					Hickory------------	---	---	sw
					Pin oak------------	---	---	oa
					Red maple----------	---	---	
					Southern red oak----	64	43.00	
					Sweetgum-----------	---	---	
					White oak----------	66	43.00	
					Yellow-poplar-------	89	88.00	
Jr:								
Johnsburg-------------	Slight	Moderate	Moderate	Severe	Hickory------------	---	---	Sw
					Pin oak------------	---	---	oa
					Red maple----------	---	---	
					Sweetgum-----------	---	---	
					White ash----------	---	---	
					White oak----------	73	55.00	
					Yellow-poplar-------	94	97.00	
Robertsville----------	Slight	Moderate	Moderate	Severe	American sycamore---	---	---	Am
					Shumard's oak-------	90	86.00	g
					Green ash----------	---	---	oa
					Pin oak------------	96	93.00	w
					Red maple----------	---	---	
					Swamp chestnut oak--	---	---	
					Sweetgum-----------	94	119.00	
					White oak----------	---	---	
					Yellow-poplar-------	93	95.00	
La:								
Lawrence--------------	Slight	Moderate	Moderate	Severe	Black oak----------	78	60.00	Am
					Pin oak------------	---	---	g
					Red maple----------	---	---	s
					Sweetgum-----------	89	103.00	oa
					White oak----------	74	56.00	y
					Willow oak---------	76	68.00	
					Yellow-poplar-------	85	81.00	

Table 7.--Woodland Management and Productivity--Continued

Map symbol and soil name	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Volume of wood fiber
							cu ft/ac
Le:							
Lawrence	Slight	Moderate	Moderate	Severe	Black oak	78	60.00
					Pin oak	---	---
					Red maple	---	---
					Sweetgum	89	103.00
					White oak	74	56.00
					Willow oak	76	68.00
					Yellow-poplar	85	81.00
Robertsville	Slight	Moderate	Moderate	Severe	American sycamore	---	---
					Shumard's oak	90	86.00
					Green ash	---	---
					Pin oak	96	93.00
					Red maple	---	---
					Swamp chestnut oak	---	---
					Sweetgum	94	119.00
					White oak	---	---
					Yellow-poplar	93	95.00
LgC2:							
Lenberg	Slight	Slight	Slight	Moderate	Virginia pine	61	91.00
					Black oak	60	43.00
					Chestnut oak	56	39.00
					Hickory	---	---
					Post oak	46	31.00
					Scarlet oak	66	48.00
					White oak	62	45.00
LlB, LlC:							
Lily	Slight	Moderate	Slight	Moderate	Virginia pine	72	112.00
					Black oak	80	62.00
					Chestnut oak	76	58.00
					Scarlet oak	73	55.00
					Shortleaf pine	63	95.00
					White oak	69	51.00
LoB, LoC2:							
Lowell	Slight	Slight	Slight	Severe	Virginia pine	78	119.00
					Black locust	74	---
					Black oak	88	70.00
					Hickory	---	---
					Northern red oak	---	---
					Sugar maple	---	---
					White ash	75	---

Table 7.—Woodland Management and Productivity—Continued

Map symbol and soil name	Management concerns				Potential productivity			S
	Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Common trees	Site index	Volume of wood fiber	
							cu ft/ac	
LpD2:								
Lowell	Moderate	Moderate	Slight	Severe	Virginia pine	78	119.00	Ea
					Black locust	74	---	no
					Black oak	88	70.00	wh
					Hickory	---	---	oa
					Northern red oak	---	---	
					Sugar maple	---	---	
					White ash	75	---	
Faywood	Moderate	Moderate	Slight	Moderate	Chinkapin oak	---	---	Ea
					Northern red oak	70	52.00	no
					Scarlet oak	72	54.00	wh
					Southern red oak	---	---	
					Sugar maple	---	---	
					White oak	60	43.00	
LsB, LsC2:								
Lowell	Slight	Slight	Slight	Severe	Virginia pine	78	119.00	Ea
					Black locust	74	---	no
					Black oak	88	70.00	wh
					Hickory	---	---	oa
					Northern red oak	---	---	
					Sugar maple	---	---	
					White ash	75	---	
LtD2:								
Lowell	Moderate	Moderate	Slight	Severe	Virginia pine	78	119.00	Ea
					Black locust	74	---	no
					Black oak	88	70.00	wh
					Hickory	---	---	oa
					Northern red oak	---	---	
					Sugar maple	---	---	
					White ash	75	---	
Faywood	Moderate	Moderate	Slight	Moderate	Chinkapin oak	---	---	Ea
					Northern red oak	70	52.00	no
					Scarlet oak	72	54.00	wh
					Southern red oak	---	---	
					Sugar maple	---	---	
					White oak	60	43.00	

Table 7.--Woodland Management and Productivity--Continued

Map symbol and soil name	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Volume of wood fiber
							cu ft/ac
Me:							
Melvin----------------	Slight	Moderate	Severe	Severe	Black willow--------	---	---
					Common hackberry----	---	---
					Green ash-----------	---	---
					Hickory-------------	---	---
					Pin oak-------------	100	98.00
					Red maple-----------	---	---
					Sweetgum------------	---	---
MoB:							
Monongahela-----------	Slight	Slight	Slight	Severe	Black walnut--------	---	---
					Northern red oak----	70	52.00
					White ash-----------	---	---
					Yellow-poplar-------	85	81.00
Ne:							
Newark----------------	Slight	Moderate	Moderate	Severe	Eastern cottonwood--	94	113.00
					Green ash-----------	---	---
					Pin oak-------------	100	98.00
					Sweetgum------------	85	93.00
NhB, NhC2:							
Nicholson-------------	Moderate	Slight	Slight	Severe	Black oak-----------	78	60.00
					Hickory-------------	---	---
					Northern red oak----	79	61.00
					Sweetgum------------	84	90.00
					White oak-----------	74	56.00
					Yellow-poplar-------	107	119.00
No:							
Nolin-----------------	Slight	Slight	Moderate	Severe	American sycamore---	---	---
					Black willow--------	---	---
					Cherrybark oak------	---	---
					River birch---------	---	---
					Sweetgum------------	92	112.00
					Yellow-poplar-------	107	119.00
OtB, OwB:							
Otwell----------------	Slight	Slight	Slight	Severe	Black oak-----------	72	54.00
					Blackgum------------	---	---
					White oak-----------	69	51.00
					Yellow-poplar-------	95	98.00

Table 7.—Woodland Management and Productivity—Continued

Map symbol and soil name	Management concerns				Potential productivity			S
	Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Common trees	Site index	Volume of wood fiber	
							cu ft/ac	
PrB, PrC:								
Pricetown	Slight	Slight	Slight	Severe	American beech	---	---	Nor
					Virginia pine	66	102.00	sh
					Black oak	85	67.00	wh
					Hickory	---	---	oa
					Red maple	---	---	
					Scarlet oak	71	53.00	
					Southern red oak	83	65.00	
					Sugar maple	---	---	
					White oak	70	52.00	
					Yellow-poplar	87	84.00	
Rb:								
Robertsville	Slight	Moderate	Moderate	Severe	American sycamore	---	---	Ame
					Shumard's oak	90	86.00	gr
					Green ash	---	---	oa
					Pin oak	96	93.00	wi
					Red maple	---	---	
					Swamp chestnut oak	---	---	
					Sweetgum	94	119.00	
					White oak	---	---	
					Yellow-poplar	93	95.00	
RoF:								
Rock outcrop.								
Fairmount	Severe	Severe	Severe	Moderate	Black locust	---	---	Vi
					Black oak	65	47.00	wh
					Black walnut	---	---	oa
					Chinkapin oak	---	---	
					Eastern redcedar	41	44.00	
					Scarlet oak	60	43.00	
					White ash	---	---	
SaB, SaC:								
Sandview	Slight	Slight	Slight	Severe	American elm	---	---	Bla
					Black cherry	---	---	ea
					Black locust	---	---	pi
					Black walnut	---	---	oa
					Bur oak	---	---	wh
					Common hackberry	---	---	po
					Hickory	---	---	
					Northern red oak	80	62.00	
					White ash	80	---	
					White oak	75	57.00	

Table 7.—Woodland Management and Productivity—Continued

Map symbol and soil name	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Volume of wood fiber	
							cu ft/ac	
SdB, SdC:								
Sandview	Slight	Slight	Slight	Severe	American elm	---	---	Bl
					Black cherry	---	---	e
					Black locust	---	---	p
					Black walnut	---	---	o
					Bur oak	---	---	w
					Common hackberry	---	---	p
					Hickory	---	---	
					Northern red oak	80	62.00	
					White ash	80	---	
					White oak	75	57.00	
SeC2:								
Shrouts	Slight	Moderate	Moderate	Moderate	Virginia pine	60	91.00	Vi
					Black oak	60	43.00	e
					Eastern redcedar	45	52.00	w
					Scarlet oak	60	43.00	
					White oak	---	---	
SfD3:								
Shrouts	Severe	Moderate	Moderate	Moderate	Virginia pine	60	91.00	Vi
					Black oak	60	43.00	e
					Eastern redcedar	45	52.00	w
					Scarlet oak	60	43.00	
					White oak	---	---	
Cynthiana	Severe	Moderate	Moderate	Moderate	American elm	---	---	Vi
					Black cherry	---	---	e
					Black locust	---	---	w
					Black walnut	71	---	o
					Chinkapin oak	---	---	
					Common hackberry	---	---	
					Eastern redcedar	42	46.00	
					Honeylocust	---	---	
					White ash	75	---	
SgF3:								
Shrouts	Severe	Severe	Severe	Moderate	Virginia pine	60	91.00	Vi
					Black oak	60	43.00	e
					Eastern redcedar	45	52.00	
					Scarlet oak	60	43.00	
					White oak	---	---	

Table 7.—Woodland Management and Productivity—Continued

Map symbol and soil name	Management concerns				Potential productivity			S
	Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Common trees	Site index	Volume of wood fiber	
							cu ft/ac	
SgF3:								
Garlin	Severe	Severe	Slight	Severe	American elm	---	---	Vi
					Black locust	---	---	ea
					Common hackberry	---	---	wh
					Eastern redcedar	40	43.00	
					Scarlet oak	60	43.00	
					White ash	---	---	
Cynthiana	Severe	Severe	Moderate	Moderate	American elm	---	---	Vi
					Black cherry	---	---	ea
					Black locust	---	---	wh
					Black walnut	71	---	oa
					Chinkapin oak	---	---	
					Common hackberry	---	---	
					Eastern redcedar	42	46.00	
					Honeylocust	---	---	
					White ash	75	---	
Sk:								
Skidmore	Slight	Slight	Moderate	Severe	American sycamore	---	---	Am
					Black walnut	---	---	ea
					River birch	---	---	pi
					Sweetgum	---	---	wh
					Yellow-poplar	103	112.00	po
TeB:								
Teddy	Slight	Slight	Slight	Severe	American beech	---	---	Ea
					Black oak	73	57.00	wh
					Eastern redcedar	---	---	po
					Southern red oak	---	---	
					Sugar maple	---	---	
					Yellow-poplar	103	114.00	
TlB, TlC:								
Tilsit	Slight	Slight	Slight	Severe	Black oak	74	56.00	Ea
					Hickory	---	---	wh
					Red maple	---	---	po
					Scarlet oak	74	56.00	
					Southern red oak	65	47.00	
					White oak	68	50.00	
					Yellow-poplar	92	93.00	

Table 7.—Woodland Management and Productivity—Continued

Map symbol and soil name	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Volume of wood fiber	S
							cu ft/ac	
TpB, TpC2:								
Trappist	Slight	Moderate	Slight	Moderate	Virginia pine	52	73.00	Vi
					Chestnut oak	51	35.00	wh
					Pitch pine	48	---	
					Scarlet oak	53	37.00	
					Shortleaf pine	50	68.00	
					White oak	52	36.00	
TrD2:								
Trappist	Moderate	Moderate	Slight	Moderate	Virginia pine	52	73.00	Vi
					Chestnut oak	51	35.00	wh
					Pitch pine	48	---	
					Scarlet oak	53	37.00	
					Shortleaf pine	50	68.00	
					White oak	52	36.00	
Colyer	Moderate	Moderate	Moderate	Slight	Virginia pine	60	91.00	Vi
					Black oak	66	48.00	sh
					Chestnut oak	65	47.00	
					Hickory	---	---	
					Scarlet oak	56	39.00	
W. Water								
Yo:								
Yosemite	Slight	Moderate	Moderate	Severe	American sycamore	---	---	Am
					Virginia pine	80	122.00	e
					Eastern cottonwood	89	100.00	co
					Green ash	---	---	a
					Pin oak	95	92.00	sw
					Red maple	---	---	
					Sweetgum	86	95.00	
					White oak	62	45.00	
					Yellow-poplar	109	122.00	

Table 8.--Recreational Development

(The information in this table indicates the dominant soil conditions but does not eliminate the need for onsite investigation. See text for definitions of terms used in this table. Absence of an entry indicates that no rating is applicable)

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
AlB: Allegheny	Severe: flooding	Slight	Moderate: slope small stones	Slight	Slight
AlC2: Allegheny	Moderate: slope	Moderate: slope	Severe: slope	Slight	Moderate: slope
BaB: Beasley	Moderate: percs slowly	Moderate: percs slowly	Moderate: percs slowly slope	Slight	Slight
BbC2: Beasley	Moderate: percs slowly slope	Moderate: percs slowly slope	Severe: slope	Slight	Moderate: slope
BeB: Berea	Moderate: percs slowly wetness	Moderate: percs slowly wetness	Moderate: slope small stones wetness	Moderate: wetness	Moderate: thin layer wetness depth to rock
Bo: Boonesboro	Severe: flooding	Moderate: flooding	Severe: flooding	Moderate: flooding	Severe: flooding
CaE2: Caneyville	Severe: slope	Severe: slope	Severe: slope depth to rock	Severe: erodes easily	Severe: slope depth to rock
CeB: Carpenter	Moderate: small stones	Moderate: small stones	Severe: small stones	Slight	Slight
CeC: Carpenter	Moderate: slope small stones	Moderate: slope small stones	Severe: slope small stones	Slight	Moderate: slope
CgE2: Carpenter	Severe: slope	Severe: slope	Severe: slope	Moderate: slope	Severe: slope
Lenberg	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
ChB: Chenault	Moderate: small stones	Moderate: small stones	Severe: small stones	Slight	Moderate: small stones

Table 8.—Recreational Development—Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
ChC:					
Chenault----------	Moderate: slope small stones	Moderate: slope small stones	Severe: slope small stones	Slight	Moderate: slope small stones
CkC:					
Chenault----------	Moderate: slope small stones	Moderate: slope small stones	Severe: slope small stones	Slight	Moderate: slope small stones
Lowell------------	Moderate: percs slowly slope	Moderate: percs slowly slope	Severe: slope	Severe: erodes easily	Moderate: slope
ClD2:					
Chenault----------	Severe: slope	Severe: slope	Severe: slope small stones	Moderate: slope	Severe: slope
Faywood-----------	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
CmB:					
Christian---------	Slight	Slight	Moderate: slope small stones	Severe: erodes easily	Slight
CmC2:					
Christian---------	Moderate: slope	Moderate: slope	Severe: slope	Severe: erodes easily	Moderate: slope
CoD2:					
Christian---------	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
CpF2:					
Colyer------------	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: erodes easily slope	Severe: slope thin layer depth to rock droughty
Trappist----------	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily slope	Severe: slope
CrB:					
Crider------------	Slight	Slight	Moderate: slope	Slight	Slight
CrC:					
Crider------------	Moderate: slope	Moderate: slope	Severe: slope	Slight	Moderate: slope
CuB:					
Culleoka----------	Slight	Slight	Moderate: slope small stones	Slight	Moderate: depth to rock

Table 8.—Recreational Development—Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
CuC2:					
Culleoka	Moderate: percs slowly slope small stones	Moderate: percs slowly slope small stones	Severe: slope small stones	Severe: erodes easily	Moderate: slope depth to rock
CuD2:					
Culleoka	Severe: slope	Severe: slope	Severe: slope	Moderate: slope	Severe: slope
CyF2:					
Cynthiana	Severe: slope	Severe: slope	Severe: slope small stones	Severe: slope	Severe: slope depth to rock
Faywood	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily slope	Severe: slope
DAM.					
Dam					
DoB:					
Donerail	Moderate: percs slowly wetness	Moderate: wetness	Moderate: percs slowly slope wetness	Slight	Moderate: wetness
EdD2:					
Eden	Severe: slope	Severe: slope	Severe: large stones slope small stones	Moderate: large stones	Severe: large stones slope
EfF2:					
Eden	Severe: slope	Severe: slope	Severe: large stones slope small stones	Severe: slope	Severe: large stones slope
Culleoka	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
EkB:					
Elk	Slight	Slight	Moderate: slope	Severe: erodes easily	Slight
EkC:					
Elk	Moderate: slope	Moderate: slope	Severe: slope	Severe: erodes easily	Moderate: slope
EmB:					
Elk	Severe: flooding	Slight	Moderate: slope	Severe: erodes easily	Slight
FaC2:					
Fairmount	Severe: depth to rock	Severe: depth to rock	Severe: slope small stones	Severe: erodes easily	Severe: large stones depth to rock

Table 8.—Recreational Development—Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
FdF2:					
Fairmount	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope small stones	Severe: erodes easily slope	Severe: large stones slope depth to rock
Faywood	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily slope	Severe: slope
Rock outcrop.					
FeC2:					
Faywood	Moderate: percs slowly slope	Moderate: percs slowly slope	Severe: slope	Severe: erodes easily	Moderate: large stones slope depth to rock
Cynthiana	Severe: depth to rock	Severe: depth to rock	Severe: slope small stones	Severe: erodes easily	Severe: large stones depth to rock
FeD2:					
Faywood	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
Cynthiana	Severe: slope depth to rock	Severe: slope	Severe: slope small stones depth to rock	Severe: erodes easily	Severe: slope depth to rock
FfC2:					
Faywood	Moderate: percs slowly slope	Moderate: percs slowly slope	Severe: slope	Severe: erodes easily	Moderate: large stones slope depth to rock
Fairmount	Severe: depth to rock	Severe: depth to rock	Severe: slope small stones	Severe: erodes easily	Severe: large stones depth to rock
FfD2:					
Faywood	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
Fairmount	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope small stones	Severe: erodes easily	Severe: large stones slope depth to rock
FoD2:					
Faywood	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
Shrouts	Severe: percs slowly slope	Severe: percs slowly slope	Severe: percs slowly slope	Moderate: slope	Severe: slope

Table 8.—Recreational Development—Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
FoF2:					
Faywood---------	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily slope	Severe: slope
Shrouts---------	Severe: percs slowly slope	Severe: percs slowly slope	Severe: percs slowly slope	Severe: slope	Severe: slope
FrB:					
Frankstown------	Moderate: small stones	Moderate: small stones	Severe: small stones	Slight	Moderate: small stones
FrC:					
Frankstown------	Moderate: slope small stones	Moderate: slope small stones	Severe: slope small stones	Slight	Moderate: slope small stones
FrD2:					
Frankstown------	Severe: slope	Severe: slope	Severe: slope small stones	Moderate: slope	Severe: slope
GaC2:					
Garlin----------	Severe: depth to rock	Severe: depth to rock	Severe: small stones depth to rock	Slight	Severe: slope depth to rock
Shrouts---------	Severe: percs slowly	Severe: percs slowly	Severe: percs slowly slope	Slight	Moderate: slope depth to rock
GaD2:					
Garlin----------	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope small stones depth to rock	Moderate: slope	Severe: slope depth to rock
Shrouts---------	Severe: percs slowly slope	Severe: percs slowly slope	Severe: percs slowly slope	Moderate: slope	Severe: slope
GmF:					
Garmon----------	Severe: slope	Severe: slope	Severe: slope small stones	Severe: slope	Severe: slope
GnB:					
Gilpin----------	Slight	Slight	Moderate: slope small stones	Slight	Moderate: depth to rock
GnC2:					
Gilpin----------	Moderate: slope	Moderate: slope	Severe: slope	Slight	Moderate: slope thin layer depth to rock
GrB:					
Greenbriar------	Slight	Slight	Moderate: slope	Severe: erodes easily	Slight

Table 8.—Recreational Development—Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
HgC:					
Hagerstown------	Moderate: slope	Moderate: slope	Severe: slope	Slight	Moderate: slope
JeB:					
Jessietown------	Slight	Slight	Moderate: slope depth to rock	Severe: erodes easily	Moderate: depth to rock
JeC:					
Jessietown------	Moderate: slope	Moderate: slope	Severe: slope	Severe: erodes easily	Moderate: slope depth to rock
Jm:					
Johnsburg-------	Severe: percs slowly wetness	Severe: percs slowly	Severe: percs slowly wetness	Moderate: wetness	Moderate: wetness
Mullins---------	Severe: percs slowly wetness	Severe: percs slowly wetness	Severe: percs slowly wetness	Severe: wetness	Severe: wetness
Jr:					
Johnsburg-------	Severe: percs slowly wetness	Severe: percs slowly	Severe: percs slowly wetness	Moderate: wetness	Moderate: wetness
Robertsville----	Severe: wetness	Severe: wetness	Severe: wetness	Severe: wetness	Severe: wetness
La:					
Lawrence--------	Severe: flooding wetness	Moderate: percs slowly wetness	Severe: wetness	Severe: erodes easily	Moderate: wetness
Le:					
Lawrence--------	Severe: wetness	Moderate: percs slowly wetness	Severe: wetness	Severe: erodes easily	Moderate: wetness
Robertsville----	Severe: wetness	Severe: wetness	Severe: wetness	Severe: wetness	Severe: wetness
LgC2:					
Lenberg---------	Moderate: percs slowly slope	Moderate: percs slowly slope	Severe: slope	Severe: erodes easily	Moderate: slope thin layer depth to rock
LlB:					
Lily------------	Slight	Slight	Moderate: slope depth to rock	Slight	Moderate: depth to rock
LlC:					
Lily------------	Moderate: slope	Moderate: slope	Severe: slope	Slight	Moderate: slope depth to rock

Table 8.—Recreational Development—Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
LoB:					
Lowell----------	Moderate: percs slowly	Moderate: percs slowly	Moderate: percs slowly slope	Slight	Slight
LoC2:					
Lowell----------	Moderate: percs slowly slope	Moderate: percs slowly slope	Severe: slope	Severe: erodes easily	Moderate: slope
LpD2:					
Lowell----------	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
Faywood---------	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
LsB:					
Lowell----------	Moderate: percs slowly	Moderate: percs slowly	Moderate: percs slowly slope	Slight	Slight
LsC2:					
Lowell----------	Moderate: percs slowly slope	Moderate: percs slowly slope	Severe: slope	Severe: erodes easily	Moderate: slope
LtD2:					
Lowell----------	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
Faywood---------	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
Me:					
Melvin----------	Severe: flooding wetness	Severe: wetness	Severe: flooding wetness	Severe: wetness	Severe: flooding wetness
MoB:					
Monongahela-----	Moderate: wetness	Moderate: wetness	Moderate: slope small stones	Severe: erodes easily	Moderate: wetness
Ne:					
Newark----------	Severe: flooding wetness	Severe: wetness	Severe: flooding wetness	Severe: erodes easily wetness	Severe: flooding wetness
NhB:					
Nicholson-------	Moderate: percs slowly wetness	Moderate: percs slowly wetness	Moderate: percs slowly slope wetness	Severe: erodes easily	Moderate: wetness
NhC2:					
Nicholson-------	Moderate: percs slowly slope wetness	Moderate: percs slowly slope wetness	Severe: slope	Severe: erodes easily	Moderate: slope wetness

Table 8.—Recreational Development—Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
No: Nolin-----------	Severe: flooding	Moderate: flooding	Slight	Severe: erodes easily	Severe: flooding
OtB: Otwell----------	Moderate: percs slowly wetness	Moderate: percs slowly wetness	Moderate: percs slowly slope wetness	Severe: erodes easily	Slight
OwB: Otwell----------	Severe: flooding percs slowly	Severe: percs slowly	Severe: percs slowly	Slight	Slight
PrB: Pricetown-------	Slight	Slight	Moderate: slope	Severe: erodes easily	Slight
PrC: Pricetown-------	Moderate: slope	Moderate: slope	Severe: slope	Severe: erodes easily	Moderate: slope
Rb: Robertsville----	Severe: flooding wetness	Severe: wetness	Severe: wetness	Severe: wetness	Severe: wetness
RoF: Rock outcrop.					
Fairmount-------	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope small stones	Severe: erodes easily slope	Severe: large stones slope depth to rock
SaB: Sandview--------	Slight	Slight	Moderate: slope	Slight	Slight
SaC: Sandview--------	Moderate: slope	Moderate: slope	Moderate: slope	Severe: erodes easily	Moderate: slope
SdB: Sandview--------	Slight	Slight	Moderate: slope	Slight	Slight
SdC: Sandview--------	Moderate: slope	Moderate: slope	Moderate: slope	Severe: erodes easily	Moderate: slope
SeC2: Shrouts---------	Severe: percs slowly	Severe: percs slowly	Severe: percs slowly slope	Slight	Moderate: slope depth to rock
SfD3: Shrouts---------	Severe: percs slowly slope	Severe: percs slowly slope	Severe: percs slowly slope	Moderate: slope	Severe: slope

Table 8.—Recreational Development—Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
SfD3:					
Cynthiana	Severe: slope depth to rock	Severe: slope	Severe: slope small stones depth to rock	Severe: erodes easily	Severe: slope thin layer depth to rock
SgF3:					
Shrouts	Severe: percs slowly slope	Severe: percs slowly slope	Severe: percs slowly slope	Severe: slope	Severe: slope
Garlin	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope small stones depth to rock	Severe: slope	Severe: slope depth to rock
Cynthiana	Severe: slope depth to rock	Severe: slope	Severe: slope small stones depth to rock	Severe: slope	Severe: slope depth to rock
Sk:					
Skidmore	Severe: flooding small stones	Severe: small stones	Severe: flooding small stones	Moderate: flooding	Severe: flooding small stones
TeB:					
Teddy	Moderate: percs slowly wetness	Moderate: percs slowly wetness	Moderate: percs slowly slope wetness	Severe: erodes easily	Slight
TlB:					
Tilsit	Moderate: percs slowly wetness	Moderate: percs slowly wetness	Moderate: percs slowly slope wetness	Moderate: wetness	Moderate: wetness
TlC:					
Tilsit	Moderate: percs slowly slope wetness	Moderate: percs slowly slope wetness	Severe: slope	Severe: erodes easily	Moderate: slope wetness
TpB:					
Trappist	Moderate: percs slowly	Moderate: percs slowly	Moderate: percs slowly slope depth to rock	Slight	Moderate: depth to rock
TpC2:					
Trappist	Moderate: percs slowly slope	Moderate: percs slowly slope	Severe: slope	Severe: erodes easily	Moderate: slope depth to rock
TrD2:					
Trappist	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
Colyer	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: erodes easily	Severe: slope depth to rock droughty

Table 8.--Recreational Development--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
W. Water					
Yo: Yosemite--------	Severe: flooding wetness	Severe: wetness	Severe: flooding small stones wetness	Severe: wetness	Severe: flooding wetness

Table 9.—Wildlife Habitat

(See text for definitions of terms used in this table. Absence of an entry indicates that no rating is applicable)

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
AlB:										
Allegheny	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
AlC2:										
Allegheny	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
BaB:										
Beasley	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
BbC2:										
Beasley	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
BeB:										
Berea	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Bo:										
Boonesboro	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
CaE2:										
Caneyville	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor
CeB:										
Carpenter	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
CeC:										
Carpenter	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
CgE2:										
Carpenter	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
Lenberg	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
ChB:										
Chenault	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
ChC:										
Chenault	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor

Table 9.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wild- life
CkC:										
Chenault	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Lowell	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
ClD2:										
Chenault	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
Faywood	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
CmB:										
Christian	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
CmC2:										
Christian	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
CoD2:										
Christian	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
CpF2:										
Colyer	Very poor	Very poor	Poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
Trappist	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor
CrB:										
Crider	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
CrC:										
Crider	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
CuB:										
Culleoka	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
CuC2:										
Culleoka	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
CuD2:										
Culleoka	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
CyF2:										
Cynthiana	Very poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
Faywood	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor

Table 9.—Wildlife Habitat—Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
DAM. Dam										
DoB: Donerail	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
EdD2: Eden	Poor	Fair	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
EfF2: Eden	Very poor	Poor	Fair	Fair	Fair	Very poor	Very poor	Poor	Fair	Very poor
Culleoka	Very poor	Poor	Good	Fair	Fair	Very poor	Very poor	Poor	Fair	Very poor
EkB: Elk	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
EkC: Elk	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
EmB: Elk	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
FaC2: Fairmount	Poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
FdF2: Fairmount	Very poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
Faywood	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Rock outcrop.										
FeC2: Faywood	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Cynthiana	Poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
FeD2: Faywood	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Cynthiana	Very poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor

Table 9.—Wildlife Habitat—Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
FfC2, FfD2:										
Faywood	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Fairmount	Poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
FoD2:										
Faywood	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Shrouts	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
FoF2:										
Faywood	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Shrouts	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor
FrB:										
Frankstown	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
FrC:										
Frankstown	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
FrD2:										
Frankstown	Very poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
GaC2:										
Garlin	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
Shrouts	Fair	Good	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
GaD2:										
Garlin	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
Shrouts	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
GmF:										
Garmon	Very poor	Poor	Good	Good	Poor	Very poor	Very poor	Poor	Fair	Very poor
GnB:										
Gilpin	Fair	Good	Good	Fair	Fair	Poor	Very poor	Good	Fair	Very poor
GnC2:										
Gilpin	Fair	Good	Good	Fair	Fair	Very poor	Very poor	Good	Fair	Very poor

Table 9.—Wildlife Habitat—Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
GrB:										
Greenbriar	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
HgC:										
Hagerstown	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
JeB, JeC:										
Jessietown	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Jm:										
Johnsburg	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Mullins	Poor	Poor	Fair	Fair	Fair	Good	Good	Poor	Fair	Good
Jr:										
Johnsburg	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Robertsville	Poor	Fair	Fair	Fair	Fair	Good	Good	Poor	Fair	Good
La:										
Lawrence	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
Le:										
Lawrence	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
Robertsville	Poor	Fair	Fair	Fair	Fair	Good	Good	Poor	Fair	Good
LgC2:										
Lenberg	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
LlB:										
Lily	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
LlC:										
Lily	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
LoB:										
Lowell	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
LoC2:										
Lowell	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
LpD2:										
Lowell	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
Faywood	Poor	Poor	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor

Table 9.—Wildlife Habitat—Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herba-ceous plants	Hard-wood trees	Conif-erous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Open-land wild-life	Wood-land wild-life	Wetland wild-life
LsB:										
Lowell	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
LsC2:										
Lowell	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
LtD2:										
Lowell	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
Faywood	Poor	Poor	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
Me:										
Melvin	Very poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
MoB:										
Monongahela	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Ne:										
Newark	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair
NhB:										
Nicholson	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
NhC2:										
Nicholson	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
No:										
Nolin	Poor	Fair	Fair	Good	Good	Poor	Very poor	Fair	Fair	Very poor
OtB, OwB:										
Otwell	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
PrB:										
Pricetown	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
PrC:										
Pricetown	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Rb:										
Robertsville	Poor	Fair	Fair	Fair	Fair	Good	Good	Poor	Fair	Good
RoF:										
Rock outcrop.										
Fairmount	Very poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor

Table 9.—Wildlife Habitat—Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
SaB:										
Sandview	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
SaC:										
Sandview	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
SdB:										
Sandview	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
SdC:										
Sandview	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
SeC2:										
Shrouts	Fair	Good	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
SfD3:										
Shrouts	Very poor	Very poor	Good	Good	Good	Very poor	Very poor	Poor	Fair	Very poor
Cynthiana	Very poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
SgF3:										
Shrouts	Very poor	Very poor	Fair	Poor	Very poor	Very poor	Very poor	Poor	Poor	Very poor
Garlin	Very poor	Very poor	Fair	Poor	Very poor	Very poor	Very poor	Poor	Poor	Very poor
Cynthiana	Very poor	Very poor	Fair	Poor	Very poor	Very poor	Very poor	Poor	Poor	Very poor
Sk:										
Skidmore	Fair	Good	Good	Fair	Fair	Poor	Very poor	Good	Fair	Very poor
TeB:										
Teddy	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
TlB:										
Tilsit	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
TlC:										
Tilsit	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
TpB:										
Trappist	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
TpC2:										
Trappist	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor

Table 9.—Wildlife Habitat—Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
TrD2:										
Trappist	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
Colyer	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
W.										
Water										
Yo:										
Yosemite	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair

Table 10.—Building Site Development

(The information in this report indicates the dominant soil condition but does not eliminate the
investigation)

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
AlB: Allegheny------	Slight	Severe: flooding	Severe: flooding	Severe: flooding	Moderate: flooding
AlC2: Allegheny------	Moderate: slope	Moderate: slope	Moderate: slope	Severe: slope	Moderate: slope
BaB: Beasley--------	Moderate: too clayey	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell slope	Severe: low strength
BbC2: Beasley--------	Moderate: slope too clayey	Moderate: shrink-swell slope	Moderate: shrink-swell slope	Severe: slope	Severe: low strength
BeB: Berea----------	Severe: wetness depth to rock	Moderate: wetness depth to rock	Severe: wetness depth to rock	Moderate: slope wetness depth to rock	Severe: low strength
Bo: Boonesboro-----	Severe: depth to rock	Severe: flooding	Severe: flooding depth to rock	Severe: flooding	Severe: flooding
CaE2: Caneyville-----	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: low strength slope depth to rock
CeB: Carpenter------	Moderate: too clayey	Slight	Slight	Moderate: slope	Moderate: low strength
CeC: Carpenter------	Moderate: slope too clayey	Moderate: slope	Moderate: slope	Severe: slope	Moderate: low strength slope

Table 10.—Building Site Development—Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
CgE2:					
Carpenter------	Severe: slope	Severe: slope slippage	Severe: slope slippage	Severe: slope slippage	Severe: slope slippage
Lenberg--------	Severe: slope	Severe: slope slippage	Severe: slope slippage	Severe: slope slippage	Severe: low strength slope slippage
ChB:					
Chenault-------	Moderate: too clayey depth to rock	Slight	Moderate: depth to rock	Moderate: slope	Moderate: low strength
ChC:					
Chenault-------	Moderate: slope too clayey depth to rock	Moderate: slope	Moderate: slope depth to rock	Severe: slope	Moderate: low strength slope
CkC:					
Chenault-------	Moderate: slope too clayey depth to rock	Moderate: slope	Moderate: slope depth to rock	Severe: slope	Moderate: low strength slope
Lowell---------	Moderate: slope too clayey depth to rock	Moderate: shrink-swell slope	Moderate: shrink-swell slope depth to rock	Severe: slope	Severe: low strength
ClD2:					
Chenault-------	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Faywood--------	Severe: slope depth to rock	Severe: slope	Severe: slope depth to rock	Severe: slope	Severe: low strength slope
CmB:					
Christian------	Moderate: too clayey	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell slope	Moderate: low strength shrink-swell
CmC2:					
Christian------	Moderate: slope too clayey	Moderate: shrink-swell slope	Moderate: shrink-swell slope	Severe: slope	Moderate: low strength shrink-swell slope

Table 10.—Building Site Development—Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
CoD2:					
Christian	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope slippage
CpF2:					
Colyer	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: low strength slope depth to rock
Trappist	Severe: slope depth to rock	Severe: slope	Severe: slope depth to rock	Severe: slope	Severe: low strength slope
CrB:					
Crider	Moderate: too clayey	Slight	Slight	Moderate: slope	Severe: low strength
CrC:					
Crider	Moderate: slope too clayey	Moderate: slope	Moderate: slope	Severe: slope	Severe: low strength
CuB:					
Culleoka	Moderate: depth to rock	Slight	Moderate: depth to rock	Moderate: slope	Moderate: low strength
CuC2:					
Culleoka	Moderate: slope depth to rock	Moderate: slope	Moderate: slope	Severe: slope	Moderate: low strength slope
CuD2:					
Culleoka	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
CyF2:					
Cynthiana	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: low strength slope depth to rock
Faywood	Severe: slope depth to rock	Severe: slope	Severe: slope depth to rock	Severe: slope	Severe: low strength slope
DAM.					

Table 10.–Building Site Development–Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
DoB:					
Donerail-------	Severe: too clayey wetness	Moderate: low strength wetness	Severe: low strength wetness	Moderate: low strength slope wetness	Severe: low strength
EdD2:					
Eden-----------	Severe: slope	Severe: slope slippage	Severe: slope slippage	Severe: slope slippage	Severe: low strength slope slippage
EfF2:					
Eden-----------	Severe: slope	Severe: slope slippage	Severe: slope slippage	Severe: slope slippage	Severe: low strength slope slippage
Culleoka-------	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
EkB:					
Elk------------	Slight	Slight	Slight	Moderate: slope	Severe: low strength
EkC:					
Elk------------	Moderate: slope	Moderate: slope	Moderate: slope	Severe: slope	Severe: low strength
EmB:					
Elk------------	Slight	Severe: flooding	Severe: flooding	Severe: flooding	Severe: low strength
FaC2:					
Fairmount------	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Severe: slope depth to rock	Severe: low strength depth to rock
FdF2:					
Fairmount------	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: low strength slope depth to rock
Faywood--------	Severe: slope depth to rock	Severe: slope	Severe: slope depth to rock	Severe: slope	Severe: low strength slope
Rock outcrop.					

Table 10.—Building Site Development—Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
FeC2:					
Faywood--------	Severe: depth to rock	Moderate: shrink-swell slope depth to rock	Severe: depth to rock	Severe: slope	Severe: low strength
Cynthiana------	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Severe: slope depth to rock	Severe: low strength depth to rock
FeD2:					
Faywood--------	Severe: slope depth to rock	Severe: slope	Severe: slope depth to rock	Severe: slope	Severe: low strength slope
Cynthiana------	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: low strength slope depth to rock
FfC2:					
Faywood--------	Severe: depth to rock	Moderate: shrink-swell slope depth to rock	Severe: depth to rock	Severe: slope	Severe: low strength
Fairmount------	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Severe: slope depth to rock	Severe: low strength depth to rock
FfD2:					
Faywood--------	Severe: slope depth to rock	Severe: slope	Severe: slope depth to rock	Severe: slope	Severe: low strength slope
Fairmount------	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: low strength slope depth to rock
FoD2, FoF2:					
Faywood--------	Severe: slope depth to rock	Severe: slope	Severe: slope depth to rock	Severe: slope	Severe: low strength slope
Shrouts--------	Severe: slope	Severe: slope slippage	Severe: slope slippage	Severe: slope slippage	Severe: low strength slope slippage

Table 10.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
FrB:					
Frankstown-----	Moderate: depth to rock	Moderate: shrink-swell	Moderate: shrink-swell depth to rock	Moderate: shrink-swell slope	Severe: low strength
FrC:					
Frankstown-----	Moderate: slope depth to rock	Moderate: shrink-swell slope	Moderate: shrink-swell slope depth to rock	Severe: slope	Severe: low strength
FrD2:					
Frankstown-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: low strength slope
GaC2:					
Garlin---------	Severe: slope depth to rock	Moderate: slope	Severe: depth to rock	Severe: slope	Moderate: slope depth to rock
Shrouts--------	Moderate: slope too clayey depth to rock	Moderate: shrink-swell slope	Moderate: shrink-swell slope depth to rock	Severe: slope	Severe: low strength
GaD2:					
Garlin---------	Severe: slope depth to rock	Severe: slope	Severe: slope depth to rock	Severe: slope	Severe: slope
Shrouts--------	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: low strength slope
GmF:					
Garmon---------	Severe: slope depth to rock	Severe: slope slippage	Severe: slope slippage depth to rock	Severe: slope slippage	Severe: slope slippage
GnB:					
Gilpin---------	Moderate: depth to rock	Slight	Moderate: depth to rock	Moderate: slope	Slight
GnC2:					
Gilpin---------	Moderate: slope depth to rock	Moderate: slope	Moderate: slope depth to rock	Severe: slope	Moderate: slope

Table 10.—Building Site Development—Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
GrB:					
Greenbriar-----	Moderate: too clayey depth to rock	Slight	Moderate: depth to rock	Moderate: slope	Severe: low strength
HgC:					
Hagerstown-----	Moderate: slope too clayey depth to rock	Moderate: shrink-swell slope	Moderate: shrink-swell slope depth to rock	Severe: slope	Severe: low strength
JeB:					
Jessietown-----	Severe: depth to rock	Moderate: depth to rock	Severe: depth to rock	Moderate: slope depth to rock	Severe: low strength
JeC:					
Jessietown-----	Severe: depth to rock	Moderate: slope depth to rock	Severe: depth to rock	Severe: slope	Severe: low strength
Jm:					
Johnsburg------	Severe: wetness	Severe: wetness	Severe: wetness	Severe: wetness	Moderate: low strength wetness
Mullins--------	Severe: wetness	Severe: wetness	Severe: wetness	Severe: wetness	Severe: low strength wetness
Jr:					
Johnsburg------	Severe: wetness	Severe: wetness	Severe: wetness	Severe: wetness	Moderate: low strength wetness
Robertsville---	Severe: wetness	Severe: wetness	Severe: wetness	Severe: wetness	Severe: low strength wetness
La:					
Lawrence-------	Severe: wetness	Severe: flooding wetness	Severe: flooding wetness	Severe: flooding wetness	Severe: low strength

Table 10.—Building Site Development—Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Le:					
Lawrence-------	Severe: wetness	Severe: wetness	Severe: wetness	Severe: wetness	Severe: low strength
Robertsville---	Severe: wetness	Severe: wetness	Severe: wetness	Severe: wetness	Severe: low strength wetness
LgC2:					
Lenberg--------	Moderate: slope too clayey depth to rock	Moderate: shrink-swell slope	Moderate: shrink-swell slope depth to rock	Severe: slope	Severe: low strength
LlB:					
Lily-----------	Severe: depth to rock	Moderate: depth to rock	Severe: depth to rock	Moderate: slope depth to rock	Moderate: depth to rock
LlC:					
Lily-----------	Severe: depth to rock	Moderate: slope depth to rock	Severe: depth to rock	Severe: slope	Moderate: slope depth to rock
LoB:					
Lowell---------	Moderate: too clayey depth to rock	Moderate: shrink-swell	Moderate: shrink-swell depth to rock	Moderate: shrink-swell slope	Severe: low strength
LoC2:					
Lowell---------	Moderate: slope too clayey depth to rock	Moderate: shrink-swell slope	Moderate: shrink-swell slope depth to rock	Severe: slope	Severe: low strength
LpD2:					
Lowell---------	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: low strength slope
Faywood--------	Severe: slope depth to rock	Severe: slope	Severe: slope depth to rock	Severe: slope	Severe: low strength slope
LsB:					
Lowell---------	Moderate: too clayey depth to rock	Moderate: shrink-swell	Moderate: shrink-swell depth to rock	Moderate: shrink-swell slope	Severe: low strength

Table 10.—Building Site Development—Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
LsC2:					
Lowell----------	Moderate: slope too clayey depth to rock	Moderate: shrink-swell slope	Moderate: shrink-swell slope depth to rock	Severe: slope	Severe: low strength
LtD2:					
Lowell----------	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: low strength slope
Faywood---------	Severe: slope depth to rock	Severe: slope	Severe: slope depth to rock	Severe: slope	Severe: low strength slope
Me:					
Melvin----------	Severe: wetness	Severe: flooding wetness	Severe: flooding wetness	Severe: flooding wetness	Severe: flooding low strength wetness
MoB:					
Monongahela-----	Severe: wetness	Moderate: wetness	Severe: wetness	Moderate: slope wetness	Moderate: frost action wetness
Ne:					
Newark----------	Severe: wetness	Severe: flooding wetness	Severe: flooding wetness	Severe: flooding wetness	Severe: flooding low strength wetness
NhB:					
Nicholson-------	Severe: wetness	Moderate: wetness	Severe: wetness	Moderate: slope wetness	Severe: low strength
NhC2:					
Nicholson-------	Severe: wetness	Moderate: slope wetness	Severe: wetness	Severe: slope	Severe: low strength
No:					
Nolin-----------	Moderate: flooding wetness	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding low strength

Table 10.—Building Site Development—Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
OtB:					
Otwell----------	Severe: wetness	Moderate: shrink-swell wetness	Severe: wetness	Moderate: shrink-swell slope wetness	Severe: low strength
OwB:					
Otwell----------	Severe: wetness	Severe: flooding	Severe: flooding wetness	Severe: flooding	Severe: low strength
PrB:					
Pricetown-------	Moderate: too clayey	Slight	Moderate: shrink-swell	Moderate: slope	Severe: low strength
PrC:					
Pricetown-------	Moderate: slope too clayey	Moderate: slope	Moderate: shrink-swell slope	Severe: slope	Severe: low strength
Rb:					
Robertsville---	Severe: wetness	Severe: flooding wetness	Severe: flooding wetness	Severe: flooding wetness	Severe: low strength wetness
RoF:					
Rock outcrop.					
Fairmount-------	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: low strength slope depth to rock
SaB:					
Sandview--------	Moderate: too clayey	Slight	Moderate: shrink-swell	Moderate: slope	Moderate: low strength
SaC:					
Sandview--------	Moderate: slope too clayey	Moderate: slope	Moderate: shrink-swell slope	Severe: slope	Moderate: low strength slope
SdB:					
Sandview--------	Moderate: too clayey	Slight	Moderate: shrink-swell	Moderate: slope	Moderate: low strength

Table 10.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads an streets
SdC:					
Sandview-------	Moderate: slope too clayey	Moderate: slope	Moderate: shrink-swell slope	Severe: slope	Moderate: low strength slope
SeC2:					
Shrouts--------	Moderate: slope too clayey depth to rock	Moderate: shrink-swell slope	Moderate: shrink-swell slope depth to rock	Severe: slope	Severe: low strength
SfD3:					
Shrouts--------	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: low strength slope
Cynthiana------	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: low strength slope depth to rock
SgF3:					
Shrouts--------	Severe: slope	Severe: slope slippage	Severe: slope slippage	Severe: slope slippage	Severe: low strength slope slippage
Garlin---------	Severe: slope depth to rock	Severe: slope	Severe: slope depth to rock	Severe: slope	Severe: low strength slope
Cynthiana------	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: low strength slope depth to rock
Sk:					
Skidmore-------	Moderate: flooding wetness	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding
TeB:					
Teddy----------	Severe: wetness	Moderate: wetness	Severe: wetness	Moderate: slope wetness	Severe: low strength

Table 10.–Building Site Development–Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
TlB:					
Tilsit----------	Severe: wetness	Moderate: wetness	Severe: wetness	Moderate: slope wetness	Severe: low strength
TlC:					
Tilsit----------	Severe: wetness	Moderate: slope wetness	Severe: wetness	Severe: slope	Severe: low strength
TpB:					
Trappist--------	Severe: depth to rock	Moderate: shrink-swell depth to rock	Severe: depth to rock	Moderate: shrink-swell slope depth to rock	Severe: low strength
TpC2:					
Trappist--------	Severe: depth to rock	Moderate: shrink-swell slope depth to rock	Severe: depth to rock	Severe: slope	Severe: low strength
TrD2:					
Trappist--------	Severe: slope depth to rock	Severe: slope	Severe: slope depth to rock	Severe: slope	Severe: low strength slope
Colyer----------	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: low strength slope depth to rock
W.					
Water					
Yo:					
Yosemite--------	Severe: wetness	Severe: flooding wetness	Severe: flooding wetness	Severe: flooding wetness	Severe: flooding wetness

Table 11.—Sanitary Facilities

(The information in this report indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
AlB:					
Allegheny	Moderate: flooding	Moderate: seepage slope	Moderate: flooding too clayey	Moderate: flooding	Fair: too clayey
AlC2:					
Allegheny	Moderate: slope	Severe: slope	Moderate: slope too clayey	Moderate: slope	Fair: slope too clayey
BaB:					
Beasley	Severe: percs slowly	Moderate: slope depth to rock	Severe: too clayey depth to rock	Moderate: depth to rock	Poor: hard to pack too clayey
BbC2:					
Beasley	Severe: percs slowly	Severe: slope	Severe: too clayey depth to rock	Moderate: slope depth to rock	Poor: hard to pack too clayey
BeB:					
Berea	Severe: percs slowly wetness depth to rock	Severe: wetness depth to rock	Severe: wetness depth to rock	Severe: wetness depth to rock	Poor: area reclaim
Bo:					
Boonesboro	Severe: flooding poor filter depth to rock	Severe: flooding seepage depth to rock	Severe: flooding seepage depth to rock	Severe: flooding seepage depth to rock	Poor: depth to rock
CaE2:					
Caneyville	Severe: percs slowly slope depth to rock	Severe: slope depth to rock	Severe: slope too clayey depth to rock	Severe: slope depth to rock	Poor: area reclaim hard to pack too clayey
CeB:					
Carpenter	Severe: percs slowly	Moderate: seepage slope depth to rock	Severe: depth to rock	Moderate: depth to rock	Fair: area reclaim too clayey
CeC:					
Carpenter	Severe: percs slowly	Severe: slope	Severe: depth to rock	Moderate: slope depth to rock	Fair: area reclaim slope too clayey
CgE2:					
Carpenter	Severe: percs slowly slope	Severe: slope	Severe: slope depth to rock	Severe: slope	Poor: slope
Lenberg	Severe: percs slowly slope depth to rock	Severe: slope depth to rock	Severe: slope too clayey depth to rock	Severe: slope depth to rock	Poor: area reclaim hard to pack too clayey

Table 11.—Sanitary Facilities—Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
ChB:					
Chenault-------	Moderate: percs slowly, depth to rock	Moderate: seepage, slope, depth to rock	Severe: depth to rock	Severe: seepage	Fair: area reclaim, too clayey
ChC:					
Chenault-------	Moderate: percs slowly, slope, depth to rock	Severe: slope	Severe: depth to rock	Severe: seepage	Fair: area reclaim, slope, too clayey
CkC:					
Chenault-------	Moderate: percs slowly, slope, depth to rock	Severe: slope	Severe: depth to rock	Severe: seepage	Fair: area reclaim, slope, too clayey
Lowell---------	Severe: percs slowly	Severe: slope	Severe: too clayey, depth to rock	Moderate: slope, depth to rock	Poor: hard to pack, too clayey
ClD2:					
Chenault-------	Severe: slope	Severe: slope	Severe: slope, depth to rock	Severe: seepage, slope	Poor: slope
Faywood--------	Severe: percs slowly, slope, depth to rock	Severe: slope, depth to rock	Severe: slope, too clayey, depth to rock	Severe: slope, depth to rock	Poor: area reclaim, hard to pack, too clayey
CmB:					
Christian------	Moderate: percs slowly	Moderate: seepage, slope	Moderate: too clayey	Slight	Poor: small stones
CmC2:					
Christian------	Moderate: percs slowly, slope	Severe: slope	Moderate: slope, too clayey	Moderate: slope	Poor: small stones
CoD2:					
Christian------	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: slope, small stones
CpF2:					
Colyer---------	Severe: percs slowly, slope, depth to rock	Severe: slope, depth to rock	Severe: slope, too clayey, depth to rock	Severe: slope, depth to rock	Poor: area reclaim, slope, too clayey
Trappist-------	Severe: percs slowly, slope, depth to rock	Severe: slope, depth to rock	Severe: slope, too clayey, depth to rock	Severe: slope, depth to rock	Poor: area reclaim, hard to pack, too clayey
CrB:					
Crider---------	Slight	Moderate: seepage, slope	Moderate: too clayey	Slight	Fair: too clayey

Table 11.—Sanitary Facilities—Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
CrC:					
Crider	Moderate: slope	Severe: slope	Moderate: slope too clayey	Moderate: slope	Fair: slope too clayey
CuB:					
Culleoka	Severe: depth to rock	Severe: seepage depth to rock	Severe: seepage depth to rock	Severe: seepage depth to rock	Poor: depth to rock
CuC2:					
Culleoka	Severe: depth to rock	Severe: seepage slope depth to rock	Severe: seepage depth to rock	Severe: seepage depth to rock	Poor: depth to rock
CuD2:					
Culleoka	Severe: slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Poor: slope depth to rock
CyF2:					
Cynthiana	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope too clayey depth to rock	Severe: slope depth to rock	Poor: area reclaim hard to pack too clayey
Faywood	Severe: percs slowly slope depth to rock	Severe: slope depth to rock	Severe: slope too clayey depth to rock	Severe: slope depth to rock	Poor: area reclaim hard to pack too clayey
DAM. Dam					
DoB:					
Donerail	Severe: percs slowly wetness	Severe: wetness	Severe: too clayey wetness	Moderate: wetness	Poor: too clayey
EdD2:					
Eden	Severe: slope depth to rock	Severe: large stones slope depth to rock	Severe: slope too clayey depth to rock	Severe: slope depth to rock	Poor: slope too clayey depth to rock
EfF2:					
Eden	Severe: slope depth to rock	Severe: large stones slope depth to rock	Severe: slope too clayey depth to rock	Severe: slope depth to rock	Poor: slope too clayey depth to rock
Culleoka	Severe: slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Poor: slope depth to rock
EkB:					
Elk	Moderate: percs slowly	Moderate: seepage	Moderate: too clayey	Slight	Fair: too clayey

Table 11.—Sanitary Facilities—Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
EkC:					
Elk------------	Moderate: percs slowly slope	Severe: slope	Moderate: slope too clayey	Moderate: slope	Fair: slope too clayey
EmB:					
Elk------------	Moderate: flooding percs slowly	Severe: flooding	Moderate: flooding too clayey	Moderate: flooding	Fair: too clayey
FaC2:					
Fairmount------	Severe: percs slowly depth to rock	Severe: large stones slope depth to rock	Severe: too clayey depth to rock	Severe: depth to rock	Poor: area reclaim hard to pack too clayey
FdF2:					
Fairmount------	Severe: percs slowly slope depth to rock	Severe: large stones slope depth to rock	Severe: slope too clayey depth to rock	Severe: slope depth to rock	Poor: area reclaim slope too clayey
Faywood--------	Severe: percs slowly slope depth to rock	Severe: slope depth to rock	Severe: slope too clayey depth to rock	Severe: slope depth to rock	Poor: area reclaim hard to pack too clayey
Rock outcrop.					
FeC2:					
Faywood--------	Severe: percs slowly depth to rock	Severe: slope depth to rock	Severe: too clayey depth to rock	Severe: depth to rock	Poor: area reclaim hard to pack too clayey
Cynthiana------	Severe: percs slowly depth to rock	Severe: slope depth to rock	Severe: too clayey depth to rock	Severe: depth to rock	Poor: area reclaim hard to pack too clayey
FeD2:					
Faywood--------	Severe: percs slowly slope depth to rock	Severe: slope depth to rock	Severe: slope too clayey depth to rock	Severe: slope depth to rock	Poor: area reclaim hard to pack too clayey
Cynthiana------	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope too clayey depth to rock	Severe: slope depth to rock	Poor: area reclaim hard to pack too clayey
FfC2:					
Faywood--------	Severe: percs slowly depth to rock	Severe: slope depth to rock	Severe: too clayey depth to rock	Severe: depth to rock	Poor: area reclaim hard to pack too clayey
Fairmount------	Severe: percs slowly depth to rock	Severe: large stones slope depth to rock	Severe: too clayey depth to rock	Severe: depth to rock	Poor: area reclaim hard to pack too clayey

Table 11.—Sanitary Facilities—Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
FfD2:					
Faywood--------	Severe: perce slowly slope depth to rock	Severe: slope depth to rock	Severe: slope too clayey depth to rock	Severe: slope depth to rock	Poor: area reclaim hard to pack too clayey
Fairmount------	Severe: percs slowly slope depth to rock	Severe: large stones slope depth to rock	Severe: slope too clayey depth to rock	Severe: slope depth to rock	Poor: area reclaim slope too clayey
FoD2, FoF2:					
Faywood--------	Severe: percs slowly slope depth to rock	Severe: slope depth to rock	Severe: slope too clayey depth to rock	Severe: slope depth to rock	Poor: area reclaim hard to pack too clayey
Shrouts--------	Severe: percs slowly slope depth to rock	Severe: slope depth to rock	Severe: slope too clayey depth to rock	Severe: slope depth to rock	Poor: hard to pack too clayey depth to rock
FrB:					
Frankstown-----	Moderate: percs slowly depth to rock	Moderate: seepage slope depth to rock	Severe: too clayey depth to rock	Moderate: depth to rock	Poor: hard to pack small stones too clayey
FrC:					
Frankstown-----	Moderate: percs slowly slope depth to rock	Severe: slope	Severe: too clayey depth to rock	Moderate: slope depth to rock	Poor: hard to pack small stones too clayey
FrD2:					
Frankstown-----	Severe: slope	Severe: slope	Severe: slope too clayey depth to rock	Severe: slope	Poor: hard to pack small stones too clayey
GaC2:					
Garlin---------	Severe: depth to rock	Severe: slope depth to rock	Severe: depth to rock	Severe: depth to rock	Poor: area reclaim
Shrouts--------	Severe: percs slowly depth to rock	Severe: slope depth to rock	Severe: too clayey depth to rock	Severe: depth to rock	Poor: hard to pack too clayey depth to rock
GaD2:					
Garlin---------	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Poor: area reclaim slope
Shrouts--------	Severe: percs slowly slope depth to rock	Severe: slope depth to rock	Severe: slope too clayey depth to rock	Severe: slope depth to rock	Poor: hard to pack too clayey depth to rock

Table 11.—Sanitary Facilities—Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
GmF:					
Garmon	Severe: slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Poor: area reclaim slope thin layer
GnB:					
Gilpin	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Poor: thin layer
GnC2:					
Gilpin	Severe: depth to rock	Severe: slope depth to rock	Severe: depth to rock	Severe: depth to rock	Poor: thin layer
GrB:					
Greenbriar	Moderate: percs slowly depth to rock	Moderate: seepage slope depth to rock	Severe: depth to rock	Moderate: depth to rock	Fair: too clayey depth to rock
HgC:					
Hagerstown	Moderate: percs slowly slope depth to rock	Severe: slope	Severe: too clayey depth to rock	Moderate: slope depth to rock	Poor: hard to pack too clayey
JeB:					
Jessietown	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Poor: depth to rock
JeC:					
Jessietown	Severe: depth to rock	Severe: slope depth to rock	Severe: depth to rock	Severe: depth to rock	Poor: depth to rock
Jm:					
Johnsburg	Severe: percs slowly wetness	Moderate: seepage slope depth to rock	Severe: wetness depth to rock	Severe: wetness	Poor: wetness
Mullins	Severe: percs slowly wetness	Severe: flooding wetness	Severe: wetness depth to rock	Severe: wetness	Poor: wetness
Jr:					
Johnsburg	Severe: percs slowly wetness	Moderate: seepage slope depth to rock	Severe: wetness depth to rock	Severe: wetness	Poor: wetness
Robertsville	Severe: percs slowly wetness	Severe: wetness	Severe: wetness	Severe: wetness	Poor: wetness
La:					
Lawrence	Severe: percs slowly wetness	Severe: flooding wetness	Severe: wetness	Severe: wetness	Poor: wetness

Table 11.—Sanitary Facilities—Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Le:					
Lawrence-------	Severe: perc slowly wetness	Severe: wetness	Severe: wetness	Severe: wetness	Poor: wetness
Robertsville---	Severe: percs slowly wetness	Severe: wetness	Severe: wetness	Severe: wetness	Poor: wetness
LgC2:					
Lenberg--------	Severe: percs slowly depth to rock	Severe: slope depth to rock	Severe: too clayey depth to rock	Severe: depth to rock	Poor: hard to pack too clayey depth to rock
LlB:					
Lily-----------	Severe: depth to rock	Severe: seepage depth to rock	Severe: seepage depth to rock	Severe: seepage depth to rock	Poor: depth to rock
LlC:					
Lily-----------	Severe: depth to rock	Severe: seepage slope depth to rock	Severe: seepage depth to rock	Severe: seepage depth to rock	Poor: depth to rock
LoB:					
Lowell---------	Severe: percs slowly	Moderate: seepage slope depth to rock	Severe: too clayey depth to rock	Moderate: depth to rock	Poor: hard to pack too clayey
LoC2:					
Lowell---------	Severe: percs slowly	Severe: slope	Severe: too clayey depth to rock	Moderate: slope depth to rock	Poor: hard to pack too clayey
LpD2:					
Lowell---------	Severe: percs slowly slope	Severe: slope	Severe: slope too clayey depth to rock	Severe: slope	Poor: hard to pack slope too clayey
Faywood--------	Severe: percs slowly slope depth to rock	Severe: slope depth to rock	Severe: slope too clayey depth to rock	Severe: slope depth to rock	Poor: hard to pack too clayey depth to rock
LsB:					
Lowell---------	Severe: percs slowly	Moderate: seepage slope depth to rock	Severe: too clayey depth to rock	Moderate: depth to rock	Poor: hard to pack too clayey
LsC2:					
Lowell---------	Severe: percs slowly	Severe: slope	Severe: too clayey depth to rock	Moderate: slope depth to rock	Poor: hard to pack too clayey

Table 11.—Sanitary Facilities—Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
LtD2:					
Lowell	Severe: percs slowly slope	Severe: slope	Severe: slope too clayey depth to rock	Severe: slope	Poor: hard to pack slope too clayey
Faywood	Severe: percs slowly slope depth to rock	Severe: slope depth to rock	Severe: slope too clayey depth to rock	Severe: slope depth to rock	Poor: hard to pack too clayey depth to rock
Me:					
Melvin	Severe: flooding wetness	Severe: flooding wetness	Severe: flooding wetness	Severe: flooding wetness	Poor: wetness
MoB:					
Monongahela	Severe: percs slowly wetness	Severe: wetness	Severe: wetness	Moderate: wetness	Fair: small stones wetness
Ne:					
Newark	Severe: flooding wetness	Severe: flooding wetness	Severe: flooding wetness	Severe: flooding wetness	Poor: wetness
NhB:					
Nicholson	Severe: percs slowly wetness	Severe: wetness	Severe: too clayey wetness	Moderate: wetness	Poor: hard to pack too clayey
NhC2:					
Nicholson	Severe: percs slowly wetness	Severe: slope wetness	Severe: too clayey wetness	Moderate: slope wetness	Poor: hard to pack too clayey
No:					
Nolin	Severe: flooding wetness	Severe: flooding seepage	Severe: flooding seepage wetness	Severe: flooding wetness	Fair: too clayey wetness
OtB:					
Otwell	Severe: percs slowly wetness	Moderate: slope	Moderate: too clayey wetness	Moderate: wetness	Fair: too clayey wetness
OwB:					
Otwell	Severe: percs slowly wetness	Moderate: slope	Moderate: flooding wetness	Moderate: flooding wetness	Fair: too clayey wetness
PrB:					
Pricetown	Moderate: percs slowly	Moderate: seepage slope	Severe: too clayey	Slight	Poor: hard to pack too clayey
PrC:					
Pricetown	Moderate: percs slowly slope	Severe: slope	Severe: too clayey	Moderate: slope	Poor: hard to pack too clayey

Table 11.—Sanitary Facilities—Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Rb:					
Robertsville---	Severe: percs slowly wetness	Severe: flooding wetness	Severe: wetness	Severe: wetness	Poor: wetness
RoF:					
Rock outcrop.					
Fairmount------	Severe: percs slowly slope depth to rock	Severe: large stones slope depth to rock	Severe: slope too clayey depth to rock	Severe: slope depth to rock	Poor: slope too clayey depth to rock
SaB:					
Sandview-------	Severe: percs slowly	Moderate: seepage slope	Severe: too clayey	Slight	Poor: too clayey
SaC:					
Sandview-------	Severe: percs slowly	Severe: slope	Severe: too clayey	Moderate: slope	Poor: too clayey
SdB:					
Sandview-------	Severe: percs slowly	Moderate: seepage slope	Severe: too clayey	Slight	Poor: too clayey
SdC:					
Sandview-------	Severe: percs slowly	Severe: slope	Severe: too clayey	Moderate: slope	Poor: too clayey
SeC2:					
Shrouts--------	Severe: percs slowly depth to rock	Severe: slope depth to rock	Severe: too clayey depth to rock	Severe: depth to rock	Poor: hard to pack too clayey depth to rock
SfD3:					
Shrouts--------	Severe: percs slowly slope depth to rock	Severe: slope depth to rock	Severe: slope too clayey depth to rock	Severe: slope depth to rock	Poor: hard to pack too clayey depth to rock
Cynthiana------	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope too clayey depth to rock	Severe: slope depth to rock	Poor: hard to pack too clayey depth to rock
SgF3:					
Shrouts--------	Severe: percs slowly slope depth to rock	Severe: slope depth to rock	Severe: slope too clayey depth to rock	Severe: slope depth to rock	Poor: hard to pack too clayey depth to rock
Garlin---------	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Poor: slope depth to rock
Cynthiana------	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope too clayey depth to rock	Severe: slope depth to rock	Poor: hard to pack too clayey depth to rock

Table 11.—Sanitary Facilities—Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Sk: Skidmore-------	Severe: flooding wetness	Severe: flooding seepage wetness	Severe: flooding seepage depth to rock	Severe: flooding seepage wetness	Poor: seepage small stones
TeB: Teddy----------	Severe: percs slowly wetness	Moderate: seepage slope	Moderate: too clayey wetness	Moderate: wetness	Fair: too clayey wetness
TlB: Tilsit---------	Severe: percs slowly wetness	Severe: wetness	Severe: wetness depth to rock	Moderate: wetness depth to rock	Fair: thin layer too clayey
TlC: Tilsit---------	Severe: percs slowly wetness	Severe: slope wetness	Severe: wetness depth to rock	Moderate: slope wetness depth to rock	Fair: slope thin layer too clayey
TpB: Trappist-------	Severe: percs slowly depth to rock	Severe: depth to rock	Severe: too clayey depth to rock	Severe: depth to rock	Poor: hard to pack too clayey depth to rock
TpC2: Trappist-------	Severe: percs slowly depth to rock	Severe: slope depth to rock	Severe: too clayey depth to rock	Severe: depth to rock	Poor: hard to pack too clayey depth to rock
TrD2: Trappist-------	Severe: percs slowly slope depth to rock	Severe: slope depth to rock	Severe: slope too clayey depth to rock	Severe: slope depth to rock	Poor: hard to pack too clayey depth to rock
Colyer---------	Severe: percs slowly slope depth to rock	Severe: slope depth to rock	Severe: slope too clayey depth to rock	Severe: slope depth to rock	Poor: slope too clayey depth to rock
W. Water					
Yo: Yosemite-------	Severe: flooding wetness	Severe: flooding seepage wetness	Severe: flooding seepage wetness	Severe: flooding seepage wetness	Poor: small stones wetness

Table 12.—Construction Materials

(The information in this report indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
AlB:				
Allegheny-------	Good	Improbable: excess fines	Improbable: excess fines	Fair: area reclaim small stones
AlC2:				
Allegheny-------	Good	Improbable: excess fines	Improbable: excess fines	Fair: area reclaim slope small stones
BaB, BbC2:				
Beasley---------	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
BeB:				
Berea-----------	Poor: area reclaim low strength depth to rock	Improbable: excess fines	Improbable: excess fines	Fair: small stones
Bo:				
Boonesboro------	Poor: area reclaim depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: small stones
CaE2:				
Caneyville------	Poor: area reclaim low strength depth to rock	Improbable: excess fines depth to rock	Improbable: excess fines depth to rock	Poor: slope too clayey depth to rock
CeB, CeC:				
Carpenter-------	Fair: area reclaim low strength depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: small stones
CgE2:				
Carpenter-------	Fair: area reclaim low strength slope depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope small stones
Lenberg---------	Poor: area reclaim low strength depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope small stones
ChB, ChC:				
Chenault--------	Fair: area reclaim low strength thin layer	Improbable: excess fines	Improbable: excess fines	Poor: small stones

Table 12.—Construction Materials—Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
CkC:				
Chenault--------	Fair: area reclaim low strength thin layer	Improbable: excess fines	Improbable: excess fines	Poor: small stones
Lowell----------	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: thin layer
ClD2:				
Chenault--------	Fair: area reclaim low strength thin layer	Improbable: excess fines	Improbable: excess fines	Poor: slope small stones
Faywood---------	Poor: area reclaim low strength depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope thin layer too clayey
CmB, CmC2:				
Christian-------	Fair: low strength shrink-swell	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim small stones too clayey
CoD2:				
Christian-------	Fair: low strength shrink-swell slope	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim small stones too clayey
CpF2:				
Colyer----------	Poor: area reclaim low strength slope	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim slope depth to rock
Trappist--------	Poor: area reclaim low strength slope	Improbable: excess fines	Improbable: excess fines	Poor: slope thin layer
CrB:				
Crider----------	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey
CrC:				
Crider----------	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: slope too clayey
CuB:				
Culleoka--------	Poor: area reclaim depth to rock	Improbable: excess fines	Improbable: excess fines	Fair: area reclaim large stones depth to rock
CuC2:				
Culleoka--------	Poor: low strength depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim large stones depth to rock

Table 12.—Construction Materials—Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
CuD2:				
Culleoka--------	Poor: area reclaim depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: large stones slope depth to rock
CyF2:				
Cynthiana-------	Poor: low strength slope depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim small stones too clayey
Faywood---------	Poor: area reclaim low strength slope	Improbable: excess fines	Improbable: excess fines	Poor: slope too clayey
DAM. Dam				
DoB:				
Donerail--------	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: thin layer
EdD2:				
Eden------------	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: large stones too clayey
EfF2:				
Eden------------	Poor: slope depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: large stones slope too clayey
Culleoka--------	Poor: area reclaim slope	Improbable: excess fines	Improbable: excess fines	Poor: large stones slope
EkB:				
Elk-------------	Fair: low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey
EkC:				
Elk-------------	Fair: low strength	Improbable: excess fines	Improbable: excess fines	Fair: slope too clayey
EmB:				
Elk-------------	Fair: low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey
FaC2:				
Fairmount-------	Poor: area reclaim low strength depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim large stones too clayey
FdF2:				
Fairmount-------	Poor: area reclaim low strength slope depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim large stones too clayey

Table 12.—Construction Materials—Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
FdF2:				
Faywood---------	Poor: area reclaim low strength slope	Improbable: excess fines	Improbable: excess fines	Poor: slope thin layer too clayey
Rock outcrop.				
FeC2:				
Faywood---------	Poor: area reclaim low strength	Improbable: excess fines	Improbable: excess fines	Poor: thin layer too clayey
Cynthiana-------	Poor: area reclaim low strength depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim large stones too clayey
FeD2:				
Faywood---------	Poor: area reclaim low strength depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope thin layer too clayey
Cynthiana-------	Poor: area reclaim low strength depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim small stones too clayey
FfC2:				
Faywood---------	Poor: area reclaim low strength depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: thin layer too clayey
Fairmount-------	Poor: area reclaim low strength depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim large stones too clayey
FfD2:				
Faywood---------	Poor: area reclaim low strength depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope thin layer too clayey
Fairmount-------	Poor: area reclaim low strength depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim large stones too clayey
FoD2:				
Faywood---------	Poor: area reclaim low strength depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope thin layer too clayey
Shrouts---------	Poor: low strength depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope small stones too clayey

Table 12.—Construction Materials—Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
FoF2:				
Faywood	Poor: area reclaim, low strength, slope	Improbable: excess fines	Improbable: excess fines	Poor: slope, thin layer, too clayey
Shrouts	Poor: slope, depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope, small stones, too clayey
FrB, FrC, FrD2:				
Frankstown	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim, small stones, too clayey
GaC2:				
Garlin	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock
Shrouts	Poor: low strength, depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: small stones, too clayey
GaD2:				
Garlin	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope, depth to rock
Shrouts	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope, small stones, too clayey
GmF:				
Garmon	Poor: area reclaim, slope, depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope, small stones
GnB:				
Gilpin	Poor: thin layer, depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: small stones
GnC2:				
Gilpin	Poor: thin layer	Improbable: excess fines	Improbable: excess fines	Poor: small stones
GrB:				
Greenbriar	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: small stones, too clayey
HgC:				
Hagerstown	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: small stones
JeB:				
Jessietown	Poor: low strength, depth to rock	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, depth to rock

Table 12.—Construction Materials—Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
JeC:				
Jessietown------	Poor: low strength depth to rock	Improbable: excess fines	Improbable: excess fines	Fair: slope too clayey depth to rock
Jm:				
Johnsburg-------	Fair: low strength thin layer depth to rock	Improbable: excess fines	Improbable: excess fines	Fair: small stones too clayey
Mullins---------	Poor: low strength wetness	Improbable: excess fines	Improbable: excess fines	Poor: wetness
Jr:				
Johnsburg-------	Fair: low strength thin layer depth to rock	Improbable: excess fines	Improbable: excess fines	Fair: small stones too clayey
Robertsville----	Poor: low strength wetness	Improbable: excess fines	Improbable: excess fines	Poor: wetness
La:				
Lawrence--------	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Good
Le:				
Lawrence--------	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Good
Robertsville----	Poor: low strength wetness	Improbable: excess fines	Improbable: excess fines	Poor: wetness
LgC2:				
Lenberg---------	Poor: area reclaim low strength depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: small stones
LlB, LlC:				
Lily------------	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Fair: area reclaim small stones depth to rock
LoB, LoC2:				
Lowell----------	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: thin layer too clayey
LpD2:				
Lowell----------	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: slope thin layer too clayey

Table 12.—Construction Materials—Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
LpD2:				
Faywood	Poor: area reclaim, low strength, depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope, thin layer, too clayey
LsB, LsC2:				
Lowell	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: thin layer, too clayey
LtD2:				
Lowell	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: slope, thin layer, too clayey
Faywood	Poor: area reclaim, low strength, depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope, thin layer, too clayey
Me:				
Melvin	Poor: low strength, wetness	Improbable: excess fines	Improbable: excess fines	Poor: wetness
MoB:				
Monongahela	Fair: wetness	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim, small stones
Ne:				
Newark	Poor: low strength, wetness	Improbable: excess fines	Improbable: excess fines	Poor: wetness
NhB:				
Nicholson	Fair: low strength, shrink-swell, wetness	Improbable: excess fines	Improbable: excess fines	Fair: small stones, too clayey
NhC2:				
Nicholson	Fair: low strength, shrink-swell, wetness	Improbable: excess fines	Improbable: excess fines	Fair: slope, small stones, too clayey
No:				
Nolin	Good	Improbable: excess fines	Improbable: excess fines	Fair: area reclaim, too clayey
OtB, OwB:				
Otwell	Fair: low strength, wetness	Improbable: excess fines	Improbable: excess fines	Fair: too clayey
PrB, PrC:				
Pricetown	Fair: low strength, shrink-swell	Improbable: excess fines	Improbable: excess fines	Fair: area reclaim, small stones, too clayey

Table 12.—Construction Materials—Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
Rb:				
Robertsville----	Poor: low strength wetness	Improbable: excess fines	Improbable: excess fines	Poor: wetness
RoF:				
Rock outcrop.				
Fairmount-------	Poor: area reclaim low strength slope	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim large stones too clayey
SaB:				
Sandview--------	Moderate: low strength	Improbable: excess fines	Improbable: excess fines	Fair: thin layer
SaC:				
Sandview--------	Moderate: low strength	Improbable: excess fines	Improbable: excess fines	Fair: slope thin layer
SdB:				
Sandview--------	Moderate: low strength	Improbable: excess fines	Improbable: excess fines	Fair: thin layer
SdC:				
Sandview--------	Moderate: low strength	Improbable: excess fines	Improbable: excess fines	Fair: slope thin layer
SeC2:				
Shrouts---------	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: small stones too clayey
SfD3:				
Shrouts---------	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope small stones too clayey
Cynthiana-------	Poor: area reclaim low strength	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim small stones depth to rock
SgF3:				
Shrouts---------	Poor: low strength slope depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope small stones too clayey
Garlin----------	Poor: slope depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope small stones too clayey
Cynthiana-------	Poor: area reclaim low strength slope	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim small stones depth to rock

Table 12.—Construction Materials—Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
Sk: Skidmore	Fair: area reclaim	Improbable: small stones	Probable	Poor: area reclaim small stones
TeB: Teddy	Fair: shrink-swell wetness	Improbable: excess fines	Improbable: excess fines	Fair: too clayey
TlB: Tilsit	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: small stones
TlC: Tilsit	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: slope small stones
TpB, TpC2: Trappist	Poor: area reclaim low strength depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: thin layer
TrD2: Trappist	Poor: area reclaim low strength depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope thin layer
Colyer	Poor: area reclaim low strength depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim slope depth to rock
W. Water				
Yo: Yosemite	Poor: wetness	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim small stones wetness

Table 13.—Water Management

(The information in this report indicates the dominant soil condition but does not eliminate the need fo
investigation)

Map symbol and soil name	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions
AlB:						
Allegheny-----	Moderate: seepage slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope	Favorable
AlC2:						
Allegheny-----	Severe: slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope	Limitation: slope
BaB:						
Beasley-------	Slight	Moderate: thin layer	Severe: no water	Limitation: deep to water	Limitation: erodes easily slope	Limitation: erodes easil
BbC2:						
Beasley-------	Slight	Moderate: thin layer	Severe: no water	Limitation: deep to water	Limitation: erodes easily slope	Limitation: slope
BeB:						
Berea---------	Moderate: seepage depth to rock	Severe: piping wetness	Severe: slow refill depth to rock	Limitation: slope depth to rock	Limitation: slope wetness depth to rock	Limitation: wetness depth to roc
Bo:						
Boonesboro----	Severe: seepage	Severe: piping thin layer	Severe: no water	Limitation: deep to water	Limitation: depth to rock	Limitation: depth to roc
CaE2:						
Caneyville----	Severe: slope depth to rock	Severe: thin layer	Severe: no water	Limitation: deep to water	Limitation: slope depth to rock	Limitation: erodes easil slope depth to roc
CeB:						
Carpenter-----	Moderate: seepage	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: percs slowly slope	Favorable
CeC:						
Carpenter-----	Moderate: seepage	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: percs slowly slope	Limitation: slope

Table 13.—Water Management—Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions
CgE2:						
Carpenter-----	Severe: slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: percs slowly slope	Limitation: slope
Lenberg-------	Severe: slope	Moderate: hard to pack thin layer	Severe: no water	Limitation: deep to water	Limitation: erodes easily slope depth to rock	Limitation: erodes easi slope depth to ro
ChB:						
Chenault------	Moderate: seepage depth to rock	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope	Favorable
ChC:						
Chenault------	Moderate: seepage depth to rock	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope	Limitation: slope
CkC:						
Chenault------	Moderate: seepage depth to rock	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope	Limitation: slope
Lowell--------	Moderate: depth to rock	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitation: erodes easily slope	Limitation: erodes easi slope
ClD2:						
Chenault------	Moderate: seepage slope depth to rock	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope	Limitation: slope
Faywood-------	Moderate: slope depth to rock	Severe: hard to pack thin layer	Severe: no water	Limitation: deep to water	Limitation: percs slowly slope depth to rock	Limitation: erodes easi slope depth to ro
CmB:						
Christian-----	Moderate: seepage slope	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitation: erodes easily slope	Limitation: erodes easi
CmC2, CoD2:						
Christian-----	Severe: slope	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitation: erodes easily slope	Limitation: erodes easi slope

Table 13.—Water Management—Continued

Map symbol and soil name	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions
CpF2:						
Colyer--------	Severe: slope depth to rock	Severe: thin layer	Severe: no water	Limitation: deep to water	Limitation: percs slowly depth to rock droughty	Limitation: erodes easi depth to ro
Trappist------	Severe: slope	Severe: hard to pack thin layer	Severe: no water	Limitation: deep to water	Limitation: erodes easily percs slowly depth to rock	Limitation: erodes easi slope depth to ro
CrB:						
Crider--------	Moderate: seepage	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope	Favorable
CrC:						
Crider--------	Moderate: seepage	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope	Limitation: slope
CuB:						
Culleoka------	Severe: seepage	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope depth to rock	Limitation: large stone depth to ro
CuC2:						
Culleoka------	Severe: seepage slope depth to rock	Moderate: hard to pack thin layer	Severe: slow refill	Limitation: deep to water	Limitation: erodes easily percs slowly slope	Limitation: erodes easi percs slowl slope
CuD2:						
Culleoka------	Severe: seepage slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope depth to rock	Limitation: large stone slope depth to ro
CyF2:						
Cynthiana-----	Severe: slope depth to rock	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitation: large stones droughty	Limitation: large stone slope depth to ro
Faywood-------	Severe: slope	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitation: percs slowly slope depth to rock	Limitation: erodes easi slope depth to ro
DAM.						
Dam						

Table 13.—Water Management—Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions
DoB: Donerail------	Moderate: seepage	Moderate: wetness	Moderate: slow refill	Limitation: slope	Limitation: percs slowly slow intake wetness	Limitation: erodes easi wetness
EdD2: Eden----------	Moderate: depth to rock	Severe: hard to pack large stones	Severe: no water	Limitation: deep to water	Limitation: large stones droughty	Limitation: large stone slope depth to ro
EfF2: Eden----------	Severe: slope	Severe: hard to pack large stones	Severe: no water	Limitation: deep to water	Limitation: large stones droughty	Limitation: large stone slope depth to ro
Culleoka------	Severe: seepage slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope depth to rock	Limitation: large stone slope depth to ro
EkB: Elk-----------	Moderate: seepage slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: erodes easily slope	Limitation: erodes easi
EkC: Elk-----------	Severe: slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: erodes easily slope	Limitation: erodes easi slope
EmB: Elk-----------	Moderate: seepage slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: erodes easily slope	Limitation: erodes easi
FaC2: Fairmount-----	Severe: depth to rock	Severe: large stones thin layer	Severe: no water	Limitation: deep to water	Limitation: percs slowly slope depth to rock	Limitation: large stone slope depth to ro
FdF2: Fairmount-----	Severe: slope depth to rock	Severe: large stones thin layer	Severe: no water	Limitation: deep to water	Limitation: percs slowly slope depth to rock	Limitation: large stone slope depth to ro

Table 13.—Water Management—Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions
FdF2:						
Faywood-------	Severe: slope	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitation: percs slowly slope depth to rock	Limitation: erodes easil slope depth to roc
Rock outcrop.						
FeC2:						
Faywood-------	Moderate: slope depth to rock	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitation: percs slowly slope depth to rock	Limitation: erodes easil slope depth to roc
Cynthiana-----	Severe: depth to rock	Severe: large stones thin layer	Severe: no water	Limitation: deep to water	Limitation: percs slowly slope depth to rock	Limitation: large stones slope depth to roc
FeD2:						
Faywood-------	Severe: slope depth to rock	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitation: percs slowly slope depth to rock	Limitation: erodes easil slope depth to roc
Cynthiana-----	Severe: slope depth to rock	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitation: large stones droughty	Limitation: large stones slope depth to roc
FfC2:						
Faywood-------	Moderate: slope depth to rock	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitation: percs slowly slope depth to rock	Limitation: erodes easil slope depth to roc
Fairmount-----	Severe: depth to rock	Severe: large stones thin layer	Severe: no water	Limitation: deep to water	Limitation: percs slowly slope depth to rock	Limitation: large stones slope depth to roc
FfD2:						
Faywood-------	Severe: slope depth to rock	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitation: percs slowly slope depth to rock	Limitation: erodes easil slope depth to roc

Table 13.—Water Management—Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions
FfD2:						
Fairmount-----	Severe: depth to rock	Severe: large stones thin layer	Severe: no water	Limitation: deep to water	Limitation: percs slowly slope depth to rock	Limitation: large stone slope depth to ro
FoD2:						
Faywood-------	Severe: slope depth to rock	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitation: percs slowly slope depth to rock	Limitation: erodes easi slope depth to ro
Shrouts-------	Severe: slope	Severe: thin layer	Severe: no water	Limitation: deep to water	Limitation: percs slowly slope	Limitation: erodes easi slope depth to ro
FoF2:						
Faywood-------	Severe: slope	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitation: percs slowly slope depth to rock	Limitation: erodes easi slope depth to ro
Shrouts-------	Severe: slope	Severe: thin layer	Severe: no water	Limitation: deep to water	Limitation: percs slowly slope	Limitation: erodes easi slope depth to ro
FrB:						
Frankstown----	Moderate: seepage slope depth to rock	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitation: slope	Favorable
FrC, FrD2:						
Frankstown----	Severe: slope	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitation: slope	Limitation: slope
GaC2, GaD2:						
Garlin--------	Severe: depth to rock	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: erodes easily slope depth to rock	Limitation: erodes easi slope depth to ro
Shrouts-------	Severe: slope	Severe: thin layer	Severe: no water	Limitation: deep to water	Limitation: percs slowly slope	Limitation: erodes easi slope depth to ro

Table 13.—Water Management—Continued

Map symbol and soil name	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions
GmF:						
Garmon--------	Severe: seepage slope	Severe: piping thin layer	Severe: no water	Limitation: deep to water	Limitation: slope depth to rock	Limitation: slope depth to roc
GnB:						
Gilpin--------	Moderate: seepage slope depth to rock	Severe: thin layer	Severe: no water	Limitation: deep to water	Limitation: slope depth to rock	Limitation: large stone depth to roc
GnC2:						
Gilpin--------	Severe: slope	Severe: thin layer	Severe: no water	Limitation: deep to water	Limitation: slope depth to rock	Limitation: large stone slope depth to roc
GrB:						
Greenbriar----	Moderate: seepage slope depth to rock	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: erodes easily slope	Limitation: erodes easi
HgC:						
Hagerstown----	Moderate: seepage slope depth to rock	Moderate: hard to pack	Severe: no water	Limitation: deep to water	Limitation: slope	Limitation: slope
JeB:						
Jessietown----	Moderate: seepage slope depth to rock	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: erodes easily slope depth to rock	Limitation: erodes easi depth to roc
JeC:						
Jessietown----	Severe: slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: erodes easily slope depth to rock	Limitation: erodes easi slope depth to roc
Jm:						
Johnsburg-----	Moderate: seepage depth to rock	Severe: piping	Severe: no water	Limitation: frost action percs slowly	Limitation: percs slowly wetness	Limitation: erodes easi rooting dept wetness

Table 13.—Water Management—Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions
Jm:						
Mullins-------	Moderate: seepage depth to rock	Severe: piping wetness	Severe: no water	Limitation: percs slowly	Limitation: percs slowly rooting depth wetness	Limitation: erodes easi rooting dept wetness
Jr:						
Johnsburg-----	Moderate: seepage depth to rock	Severe: piping	Severe: no water	Limitation: frost action percs slowly	Limitation: percs slowly wetness	Limitation: erodes easi rooting dept wetness
Robertsville--	Slight	Severe: piping wetness	Severe: no water	Limitation: percs slowly	Limitation: percs slowly rooting depth wetness	Limitation: erodes easi rooting dept wetness
La:						
Lawrence------	Slight	Severe: piping	Severe: no water	Limitation: percs slowly	Limitation: percs slowly rooting depth wetness	Limitation: erodes easi rooting dept wetness
Le:						
Lawrence------	Slight	Severe: piping	Severe: no water	Limitation: percs slowly	Limitation: percs slowly rooting depth wetness	Limitation: erodes easi rooting dept wetness
Robertsville--	Slight	Severe: piping wetness	Severe: no water	Limitation: percs slowly	Limitation: percs slowly rooting depth wetness	Limitation: erodes easi rooting dept wetness
LgC2:						
Lenberg-------	Moderate: depth to rock	Moderate: hard to pack thin layer	Severe: no water	Limitation: deep to water	Limitation: erodes easily slope depth to rock	Limitation: erodes easi slope depth to ro
LlB:						
Lily----------	Severe: seepage	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope depth to rock	Limitation: depth to ro
LlC:						
Lily----------	Severe: seepage	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope depth to rock	Limitation: slope depth to ro

Table 13.—Water Management—Continued

Map symbol and soil name	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions
LoB:						
Lowell--------	Moderate: depth to rock	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitation: erodes easily slope	Limitation: erodes easi
LoC2:						
Lowell--------	Moderate: depth to rock	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitation: erodes easily slope	Limitation: erodes easi slope
LpD2:						
Lowell--------	Severe: slope depth to rock	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitation: erodes easily slope	Limitation: erodes easi slope
Faywood-------	Severe: slope depth to rock	Severe: hard to pack thin layer	Severe: no water	Limitation: deep to water	Limitation: percs slowly slope depth to rock	Limitation: erodes easi slope depth to ro
LsB:						
Lowell--------	Moderate: depth to rock	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitation: erodes easily slope	Limitation: erodes easi
LsC2:						
Lowell--------	Moderate: depth to rock	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitation: erodes easily slope	Limitation: erodes easi slope
LtD2:						
Lowell--------	Severe: slope depth to rock	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitation: erodes easily slope	Limitation: erodes easi slope
Faywood-------	Severe: slope depth to rock	Severe: hard to pack thin layer	Severe: no water	Limitation: deep to water	Limitation: percs slowly slope depth to rock	Limitation: erodes easi slope depth to ro
Me:						
Melvin--------	Moderate: seepage	Severe: piping wetness	Moderate: slow refill	Limitation: flooding	Limitation: erodes easily flooding wetness	Limitation: erodes easi wetness

Table 13.—Water Management—Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions
MoB: Monongahela	Moderate: seepage slope	Severe: piping	Severe: no water	Limitation: percs slowly slope	Limitation: percs slowly slope wetness	Limitation: erodes easil wetness
Ne: Newark	Moderate: seepage	Severe: piping wetness	Moderate: slow refill	Limitation: flooding frost action	Limitation: erodes easily flooding wetness	Limitation: erodes easil wetness
NhB: Nicholson	Moderate: seepage slope	Moderate: hard to pack wetness	Severe: no water	Limitation: percs slowly slope	Limitation: percs slowly slope wetness	Limitation: erodes easil wetness
NhC2: Nicholson	Severe: slope	Moderate: hard to pack wetness	Severe: no water	Limitation: percs slowly slope	Limitation: percs slowly slope wetness	Limitation: erodes easil slope wetness
No: Nolin	Severe: seepage	Severe: piping	Moderate: slow refill deep to water	Limitation: deep to water	Limitation: erodes easily flooding	Limitation: erodes easil
OtB: Otwell	Moderate: slope	Moderate: thin layer wetness	Severe: no water	Limitation: frost action percs slowly slope	Limitation: percs slowly slope wetness	Limitation: erodes easil wetness
OwB: Otwell	Moderate: slope	Moderate: wetness	Severe: no water	Limitation: frost action percs slowly	Limitation: percs slowly slope wetness	Limitation: erodes easil wetness
PrB: Pricetown	Moderate: seepage slope	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitation: erodes easily slope	Limitation: erodes easil

Table 13.—Water Management—Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions
PrC: Pricetown-----	Severe: slope	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitation: erodes easily slope	Limitation: erodes easi slope
Rb: Robertsville--	Slight	Severe: piping wetness	Severe: no water	Limitation: percs slowly	Limitation: percs slowly rooting depth wetness	Limitation: erodes easi rooting dep wetness
RoF: Rock outcrop.						
Fairmount-----	Severe: slope depth to rock	Severe: large stones thin layer	Severe: no water	Limitation: deep to water	Limitation: percs slowly slope depth to rock	Limitation: large stone slope depth to ro
SaB: Sandview------	Moderate: seepage slope	Slight	Severe: no water	Limitation: deep to water	Limitation: erodes easily slope	Favorable
SaC: Sandview------	Severe: slope	Slight	Severe: no water	Limitation: deep to water	Limitation: erodes easily slope	Limitation: slope
SaC: Sandview------	Severe: slope	Slight	Severe: no water	Limitation: deep to water	Limitation: erodes easily slope	Limitation: slope
SdB: Sandview------	Moderate: seepage slope	Slight	Severe: no water	Limitation: deep to water	Limitation: erodes easily slope	Favorable
SdC: Sandview------	Severe: slope	Slight	Severe: no water	Limitation: deep to water	Limitation: erodes easily slope	Limitation: slope
SeC2: Shrouts-------	Severe: slope depth to rock	Severe: thin layer	Severe: no water	Limitation: deep to water	Limitation: percs slowly slope	Limitation: erodes easi slope depth to ro

Table 13.—Water Management—Continued

Map symbol and soil name	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions
SfD3:						
Shrouts-------	Severe: slope	Severe: thin layer	Severe: no water	Limitation: deep to water	Limitation: percs slowly slope	Limitation: erodes easi[illegible] slope depth to ro[illegible]
Cynthiana-----	Severe: slope depth to rock	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitation: large stones droughty	Limitation: large stone[illegible] slope depth to ro[illegible]
SgF3:						
Shrouts-------	Severe: slope	Severe: thin layer	Severe: no water	Limitation: deep to water	Limitation: percs slowly slope	Limitation: erodes easi[illegible] slope depth to ro[illegible]
Garlin--------	Severe: slope depth to rock	Severe: thin layer	Severe: no water	Limitation: deep to water	Limitation: percs slowly slope	Limitation: erodes easi[illegible] slope depth to ro[illegible]
Cynthiana-----	Severe: slope depth to rock	Severe: hard to pack	Severe: no water	Limitation: deep to water	Limitation: large stones droughty	Limitation: large stone[illegible] slope depth to ro[illegible]
Sk:						
Skidmore------	Severe: seepage	Severe: seepage	Moderate: deep to water depth to rock	Limitation: deep to water	Limitation: flooding droughty	Limitation: large stone[illegible]
TeB:						
Teddy---------	Moderate: seepage slope	Severe: piping	Severe: no water	Limitation: percs slowly slope	Limitation: percs slowly slope wetness	Limitation: erodes easi[illegible] wetness
TlB:						
Tilsit--------	Moderate: seepage depth to rock	Severe: piping	Severe: no water	Limitation: percs slowly slope	Limitation: percs slowly rooting depth wetness	Limitation: erodes easi[illegible] wetness
TlC:						
Tilsit--------	Moderate: seepage slope depth to rock	Severe: piping	Severe: no water	Limitation: percs slowly slope	Limitation: percs slowly rooting depth wetness	Limitation: erodes easi[illegible] slope wetness

Table 13.—Water Management—Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions
TpB:						
Trappist------	Moderate: depth to rock	Severe: hard to pack thin layer	Severe: no water	Limitation: deep to water	Limitation: erodes easily percs slowly depth to rock	Limitation: erodes easi depth to roc
TpC2:						
Trappist------	Moderate: slope depth to rock	Severe: hard to pack thin layer	Severe: no water	Limitation: deep to water	Limitation: erodes easily percs slowly depth to rock	Limitation: erodes easi slope depth to roc
TrD2:						
Trappist------	Severe: slope depth to rock	Severe: hard to pack thin layer	Severe: no water	Limitation: deep to water	Limitation: erodes easily percs slowly depth to rock	Limitation: erodes easi slope depth to roc
Colyer--------	Severe: depth to rock	Severe: thin layer	Severe: no water	Limitation: deep to water	Limitation: percs slowly depth to rock droughty	Limitation: erodes easi depth to roc
W.						
Water						
Yo:						
Yosemite------	Severe: seepage	Severe: wetness	Slight	Limitation: flooding	Limitation: flooding wetness droughty	Limitation: wetness

Table 14.--Engineering Index Properties

(Absence of an entry indicates that the data were not estimated)

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments 3-10 inches	Percentage passing sieve number-- 4	10	40	20
	In				Pct				
AlB:									
Allegheny-------	0-7	Loam	CL-ML, ML	A-4	0	90-100	80-100	65-100	55-
	7-17	Clay loam, loam, sandy clay loam	CL, ML, SC, SM	A-4, A-6	0	90-100	80-100	65-95	35-
	17-80	Clay loam, loam, sandy clay loam	CL, SC, ML, SM	A-1, A-2, A-4, A-6	0-5	65-100	55-100	35-95	20-
AlC2:									
Allegheny-------	0-5	Loam	CL-ML, ML	A-4	0	90-100	80-100	65-100	55-
	5-17	Clay loam, loam, sandy clay loam	CL, ML, SC, SM	A-4, A-6	0	90-100	80-100	65-95	35-
	17-80	Clay loam, loam, sandy clay loam	CL, SC, ML, SM	A-1, A-2, A-4, A-6	0-5	65-100	55-100	35-95	20-
BaB:									
Beasley---------	0-8	Silt loam	CL-ML, ML	A-4	0-5	90-100	85-100	80-100	75-
	8-16	Silty clay, clay	CH, CL	A-7	0-5	90-100	85-100	85-100	75-
	16-45	Silty clay, clay	CH, CL	A-7	0-10	70-100	55-100	50-100	50-
	45-50	Weathered bedrock			---	---	---	---	--
BbC2:									
Beasley---------	0-8	Silty clay loam	CL	A-6, A-7	0-5	90-100	85-100	80-100	75-
	8-16	Silty clay, clay	CH, CL	A-7	0-5	90-100	85-100	85-100	75-
	16-45	Silty clay, clay	CH, CL	A-7	0-10	70-100	55-100	50-100	50-
	45-50	Weathered bedrock			---	---	---	---	--

Table 14.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Frag- ments	Percentage passing sieve number--			
			Unified	AASHTO	3-10 inches	4	10	40	20
	In				Pct				
BeB:									
Berea-----------	0-8	Silt loam	CL, ML	A-4	0-5	90-100	85-100	75-100	60-
	8-26	Silty clay loam, silt loam	CL, CL-ML	A-4, A-6	0-5	90-100	85-100	75-100	65-
	26-30	Weathered bedrock			---	---	---	---	--
	30-32	Unweathered bedrock			---	---	---	---	--
Bo:									
Boonesboro------	0-7	Silt loam	ML, CL, CL-ML	A-4, A-6	0-5	90-100	85-100	80-100	70-
	7-37	Gravelly silt loam, loam, gravelly silty clay loam	CL, CL-ML, GC, GM	A-2, A-4, A-6, A-7	0-20	50-75	40-70	35-65	25-
	37-41	Unweathered bedrock			---	---	---	---	--
CaE2:									
Caneyville------	0-3	Silt loam	CL, CL-ML, ML	A-4, A-6	0-3	90-100	85-100	75-100	60-
	3-36	Silty clay, clay, silty clay loam	CH, CL	A-7	0-3	90-100	85-100	75-100	65-
	36-40	Unweathered bedrock			---	---	---	---	--
CeB, CeC:									
Carpenter-------	0-12	Gravelly silt loam	CL-ML, ML	A-4	0-10	70-95	60-85	55-80	55-
	12-42	Gravelly silty clay loam, gravelly silt loam, silt loam, loam	CL, CL-ML	A-4, A-6	0-10	60-95	60-90	55-80	55-
	42-52	Channery silty clay, gravelly silty clay loam, silty clay, clay loam	CL, CL-ML, ML	A-4, A-6, A-7	0-10	60-95	60-90	55-80	55-
	52-65	Weathered bedrock			---	---	---	---	--

Table 14.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--			
			Unified	AASHTO	3-10 inches	4	10	40	20
	In				Pct				
CgE2:									
Carpenter-------	0-12	Gravelly silt loam	CL-ML, ML	A-4	0-10	70-95	60-85	55-80	55-
	12-42	Gravelly silty clay loam, gravelly silt loam, silt loam, loam	CL, CL-ML	A-4, A-6	0-10	60-95	60-90	55-80	55-
	42-52	Channery silty clay, gravelly silty clay loam, silty clay, clay loam	CL, CL-ML, ML	A-4, A-6, A-7	0-10	60-95	60-90	55-80	55-
	52-65	Weathered bedrock			---	---	---	---	--
Lenberg---------	0-5	Silt loam	CL, CL-ML, ML	A-4, A-6, A-7	0-5	75-100	75-100	75-95	65-
	5-14	Silty clay loam, silty clay, gravelly clay	CH, CL	A-6, A-7	0-5	75-100	60-100	55-95	50-
	14-30	Silty clay, clay, gravelly clay	CH, CL, MH, ML	A-7	0-5	75-100	55-100	54-95	50-
	30-39	Channery silty clay, clay, silty clay	CH, CL, GC, SC	A-7	0-40	60-95	40-95	40-95	36-
	39-55	Weathered bedrock			---	---	---	---	--
ChB, ChC:									
Chenault--------	0-7	Gravelly silt loam	CL-ML, ML	A-4	0-5	65-90	60-90	55-85	55-
	7-48	Gravelly silty clay loam, silty clay loam, clay loam	CL, CL-ML	A-4, A-6	0-5	65-85	60-85	55-80	55-
	48-58	Gravelly silty clay, gravelly clay, clay, silty clay	CH, CL	A-7	0	65-90	60-90	60-90	60-
	58-60	Unweathered bedrock			---	---	---	---	--

Table 14.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--			
			Unified	AASHTO	3-10 inches	4	10	40	20
	In				Pct				
CkC:									
Chenault--------	0-7	Gravelly silt loam	CL-ML, ML	A-4	0-5	65-90	60-90	55-85	55-
	7-48	Gravelly silty clay loam, silty clay loam, clay loam	CL, CL-ML	A-4, A-6	0-5	65-85	60-85	55-80	55-
	48-58	Gravelly silty clay, gravelly clay, clay, silty clay	CH, CL	A-7	0	65-90	60-90	60-90	60-
	58-60	Unweathered bedrock			---	---	---	---	--
Lowell----------	0-6	Silt loam	CL, CL-ML, ML	A-4	0	100	95-100	90-100	85-
	6-42	Silty clay, clay, silty clay loam	CH, CL, MH	A-6, A-7	0	100	95-100	90-100	85-
	42-52	Clay, silty clay	CH, CL, MH	A-7	0-10	95-100	90-100	85-100	75-
	52-56	Unweathered bedrock			---	---	---	---	--
ClD2:									
Chenault--------	0-5	Gravelly silt loam	CL-ML, ML	A-4	0-5	65-90	60-90	55-85	55-
	5-48	Gravelly silty clay loam, silty clay loam, clay loam	CL, CL-ML	A-4, A-6	0-5	65-85	60-85	55-80	55-
	48-58	Gravelly silty clay, gravelly clay, clay, silty clay	CH, CL	A-7	0	65-90	60-90	60-90	60-
	58-60	Unweathered bedrock			---	---	---	---	--
Faywood---------	0-6	Silty clay loam	CL, CL-ML, ML	A-6	0-15	100	95-100	90-100	85-
	6-30	Silty clay, clay, silty clay loam	CH, CL	A-7	0-15	90-100	90-100	85-100	75-
	30-34	Unweathered bedrock			---	---	---	---	--

Table 14.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments 3-10 inches	Percentage passing sieve number--: 4	10	40	20
	In				Pct				
CmB:									
Christian-------	0-8	Silt loam	CL-ML, ML, SC-SM, SM	A-4	0-5	85-100	85-100	70-95	40-
	8-18	Clay loam, silty clay loam, gravelly silty clay loam, gravelly silty clay	CL, GC, ML, SC	A-4, A-6	0-10	70-100	50-100	40-100	36-
	18-48	Silty clay, clay, gravelly clay	CH, CL, GC, SC	A-7	0-10	70-100	50-100	45-100	40-
	48-90	Clay, gravelly clay	SC, CH, CL, GC	A-7	0-10	70-100	50-100	45-100	40-
CmC2:									
Christian-------	0-5	Silt loam	CL-ML, ML, SC-SM, SM	A-4	0-5	85-100	85-100	70-95	40-
	5-18	Clay loam, silty clay loam, gravelly silty clay loam, gravelly silty clay	CL, GC, ML, SC	A-4, A-6	0-10	70-100	50-100	40-100	36-
	18-48	Silty clay, clay, gravelly clay	CH, CL, GC, SC	A-7	0-10	70-100	50-100	45-100	40-
	48-90	Clay, gravelly clay	SC, CH, CL, GC	A-7	0-10	70-100	50-100	45-100	40-
CoD2:									
Christian-------	0-6	Silty clay loam	ML, CL, CL-ML	A-4, A-6	0-5	85-100	85-100	85-100	70-
	6-18	Silty clay loam, clay loam, gravelly silty clay loam, gravelly silty clay	CL, GC, ML, SC	A-6, A-4	0-10	70-100	50-100	40-100	36-
	18-48	Silty clay, clay, gravelly clay	CH, CL, GC, SC	A-7	0-10	70-100	50-100	45-100	40-
	48-90	Clay, gravelly clay	CH, CL, GC, SC	A-7	0-10	70-100	50-100	45-100	40-

Table 14.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--			
			Unified	AASHTO	3-10 inches	4	10	40	20
	In				Pct				
CpF2:									
Colyer----------	0-9	Silty clay loam	CL, CL-ML, ML	A-4, A-6	0	80-100	80-95	65-95	55-
	9-14	Channery clay, very channery silty clay, very channery silty clay loam	GC, GM	A-2, A-6, A-7	0-10	25-60	20-50	20-50	15-
	14-18	Unweathered bedrock			---	---	---	---	--
Trappist--------	0-7	Silty clay loam	CL, CL-ML	A-4, A-6	0	95-100	90-100	80-100	60-
	7-26	Silty clay, clay, channery silty clay	CH, CL	A-6, A-7	0	80-100	60-100	55-100	50-
	26-35	Very channery clay, very channery silty clay, channery clay	CH, CL, GC, SC	A-2, A-6, A-7	0-5	30-75	20-65	20-60	15-
	35-39	Unweathered bedrock			---	---	---	---	--
CrB, CrC:									
Crider----------	0-8	Silt loam	CL, CL-ML, ML	A-4, A-6	0	100	95-100	90-100	85-
	8-32	Silt loam, silty clay loam	CL, CL-ML, ML	A-4, A-6, A-7	0	100	95-100	90-100	85-
	32-64	Silty clay, clay, silty clay loam	CH, CL	A-6, A-7	0-5	85-100	75-100	70-100	60-
CuB:									
Culleoka--------	0-12	Silt loam	CL, CL-ML, ML	A-4	0-5	90-100	85-100	70-100	55-
	12-32	Channery silt loam, channery silty clay loam, flaggy loam, silty clay loam	CL, CL-ML, ML	A-4, A-6	5-25	80-95	75-95	65-95	55-
	32-38	Very channery silty clay loam, flaggy loam	CL, GC, GM, ML	A-2, A-4, A-6	10-60	50-95	40-90	35-90	30-
	38-44	Unweathered bedrock			---	---	---	---	--

Table 14.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments 3-10 inches	Percentage passing sieve number-- 4	10	40	200
	In				Pct				
CuC2, CuD2:									
Culleoka--------	0-7	Silt loam	CL, CL-ML, ML	A-4	0-5	90-100	85-100	70-100	55-
	7-32	Channery silt loam, channery silty clay loam, flaggy loam, silty clay loam	CL, CL-ML, ML	A-4, A-6	5-25	80-95	75-95	65-95	55-
	32-38	Very channery silty clay loam, flaggy loam	CL, GC, GM, ML	A-2, A-4, A-6	10-60	50-95	40-90	35-90	30-
	38-44	Unweathered bedrock			---	---	---	---	--
CyF2:									
Cynthiana-------	0-6	Silty clay loam	ML, CL, CL-ML	A-4, A-6, A-7	0-30	70-100	65-100	60-100	55-
	6-16	Flaggy clay, flaggy silty clay, clay	CH, CL, MH	A-7	5-30	70-100	65-100	60-100	55-
	16-20	Unweathered bedrock			---	---	---	---	--
Faywood---------	0-6	Silty clay loam	CL, CL-ML, ML	A-6	0-15	100	95-100	90-100	85-
	6-30	Silty clay, clay, silty clay loam	CH, CL	A-7	0-15	90-100	90-100	85-100	75-
	30-34	Unweathered bedrock			---	---	---	---	--
DAM.									
Dam									
DoB:									
Donerail--------	0-14	Silt loam	CL, CL-ML	A-4, A-6	0	95-100	95-100	90-100	80-
	14-45	Silt loam, silty clay loam, clay	CH	A-4, A-6	0	95-100	95-100	85-100	80-
	45-65	Clay, silty clay	CH, CL	A-6, A-7	0	95-100	95-100	90-100	85-

Table 14.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments 3-10 inches	Percentage passing sieve number--			
			Unified	AASHTO		4	10	40	20
	In				Pct				
EdD2:									
Eden------------	0-5	Flaggy silty clay loam	CH, CL	A-6, A-7	25-40	75-95	70-95	70-95	65-
	5-24	Flaggy silty clay, flaggy clay, silty clay	CH, CL	A-7	10-45	75-100	55-100	50-100	50-
	24-34	Weathered bedrock			---	---	---	---	--
EfF2:									
Eden------------	0-5	Flaggy silty clay loam	CH, CL	A-6, A-7	25-40	75-95	70-95	70-95	65-
	5-24	Flaggy silty clay, flaggy clay, silty clay	CH, CL	A-7	10-45	75-100	55-100	50-100	50-
	24-34	Weathered bedrock			---	---	---	---	--
Culleoka--------	0-4	Flaggy silt loam	CL, CL-ML, ML	A-4	0-5	90-100	85-100	70-100	55-
	4-21	Flaggy silt loam, channery silty clay loam, flaggy loam, silty clay loam	CL, CL-ML, ML	A-4, A-6	5-25	80-95	75-95	65-95	55-
	21-23	Unweathered bedrock			---	---	---	---	--
EkB, EkC, EmB:									
Elk-------------	0-8	Silt loam	CL, CL-ML, ML	A-4	0	95-100	95-100	85-100	70-
	8-44	Silty clay loam, silt loam	CL, CL-ML, ML	A-4, A-6	0	95-100	90-100	85-100	75-
	44-65	Silty clay loam, silt loam, silty clay	CL-ML, ML, SC-SM, CL	A-4, A-6	0	75-100	50-100	45-100	40-

Table 14.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--			
			Unified	AASHTO	3-10 inches	4	10	40	20
	In				Pct				
FaC2:									
Fairmount--------	0-9	Silty clay loam	CL	A-6, A-7	8-50	80-100	70-100	65-100	60-
	9-18	Flaggy silty clay loam, flaggy clay, flaggy silty clay	CH, CL	A-7	8-50	80-100	70-100	65-100	60-
	18-22	Unweathered bedrock			---	---	---	---	--
FdF2:									
Fairmount--------	0-9	Silty clay loam	CL	A-6, A-7	8-50	80-100	70-100	65-100	60-
	9-18	Flaggy silty clay loam, flaggy clay, flaggy silty clay	CH, CL	A-7	8-50	80-100	70-100	65-100	60-
	18-22	Unweathered bedrock			---	---	---	---	--
Faywood----------	0-6	Silty clay loam	CL, CL-ML, ML	A-6	0-15	100	95-100	90-100	85-
	6-30	Silty clay, clay, silty clay loam	CH, CL	A-7	0-15	90-100	90-100	85-100	75-
	30-34	Unweathered bedrock			---	---	---	---	--
Rock outcrop.									
FeC2, FeD2:									
Faywood----------	0-6	Silty clay loam	CL, CL-ML, ML	A-6	0-15	100	95-100	90-100	85-
	6-30	Silty clay, clay, silty clay loam	CH, CL	A-7	0-15	90-100	90-100	85-100	75-
	30-34	Unweathered bedrock			---	---	---	---	--
Cynthiana--------	0-6	Silty clay loam	CL, CL-ML, ML	A-4, A-6, A-7	0-30	70-100	65-100	60-100	55-
	6-16	Flaggy clay, flaggy silty clay, clay	CH, CL, MH	A-7	5-30	70-100	65-100	60-100	55-
	16-20	Unweathered bedrock			---	---	---	---	--

Table 14.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Frag- ments	Percentage passing sieve number--			
			Unified	AASHTO	3-10 inches	4	10	40	20
	In				Pct				
FfC2, FfD2:									
Faywood---------	0-6	Silty clay loam	CL, CL-ML, ML	A-6	0-15	100	95-100	90-100	85-
	6-30	Silty clay, clay, silty clay loam	CH, CL	A-7	0-15	90-100	90-100	85-100	75-
	30-34	Unweathered bedrock			---	---	---	---	--
Fairmount-------	0-9	Silty clay loam	CL	A-6, A-7	8-50	80-100	70-100	65-100	60-
	9-18	Flaggy silty clay loam, flaggy clay, flaggy silty clay	CH, CL	A-7	8-50	80-100	70-100	65-100	60-
	18-22	Unweathered bedrock			---	---	---	---	--
FoD2, FoF2:									
Faywood---------	0-6	Silty clay loam	CL, CL-ML, ML	A-6	0-15	100	95-100	90-100	85-
	6-30	Silty clay, clay, silty clay loam	CH, CL	A-7	0-15	90-100	90-100	85-100	75-
	30-34	Unweathered bedrock			---	---	---	---	--
Shrouts---------	0-4	Silty clay loam	CL-ML, ML	A-4, A-6	0	100	90-100	85-100	80-
	4-26	Clay, silty clay	CH, CL	A-7	0-10	90-100	90-100	85-100	80-
	26-35	Weathered bedrock			---	---	---	---	--
FrB, FrC:									
Frankstown------	0-8	Gravelly silt loam	CL-ML, ML	A-4, A-6	0	75-100	70-85	65-80	60-
	8-16	Gravelly silty clay loam, gravelly silt loam, silt loam	CH, CL, GC, ML	A-4, A-6	0	60-100	55-100	50-100	45-
	16-44	Gravelly silty clay loam, gravelly silt loam, channery clay	CH, CL, GC, MH	A-6, A-7	0-5	45-100	40-95	40-95	35-
	44-46	Unweathered bedrock			---	---	---	---	--

Table 14.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Frag- ments 3-10 inches	Percentage passing sieve number--			
			Unified	AASHTO		4	10	40	20
	In				Pct				
FrD2:									
Frankstown------	0-5	Gravelly silt loam	CL-ML, ML	A-4, A-6	0	75-100	70-85	65-80	60-
	5-25	Gravelly silty clay loam, gravelly silt loam, silt loam	CH, CL, GC, ML	A-4, A-6	0	60-100	55-100	50-100	45-
	25-45	Gravelly silty clay loam, gravelly silt loam, channery clay	CH, CL, GC, MH	A-6, A-7	0-5	45-100	40-95	40-95	35-
	45-47	Unweathered bedrock			---	---	---	---	--
GaC2, GaD2:									
Garlin----------	0-7	Loam	CL, CL-ML, ML	A-4, A-6	0-10	85-95	70-90	70-90	55-
	7-18	Silt loam, loam, silty clay loam	CL, CL-ML, ML	A-4, A-6	0-15	80-90	70-90	65-90	50-
	18-23	Weathered bedrock			---	---	---	---	--
	23-25	Unweathered bedrock			---	---	---	---	--
Shrouts---------	0-4	Silty clay loam	CL-ML, ML	A-4, A-6	0	100	90-100	85-100	80-
	4-26	Clay, silty clay	CH, CL	A-7	0-10	90-100	90-100	85-100	80-
	26-35	Weathered bedrock			---	---	---	---	--
GmF:									
Garmon----------	0-3	Channery silt loam	CL, CL-ML, GC, GC-GM	A-4, A-6	0-10	55-80	50-75	45-75	40-
	3-26	Loam, channery silt loam, channery silty clay loam	CL, CL-ML, GC-GM, SC-SM	A-4, A-6	0-15	60-85	50-85	45-80	36-
	26-30	Unweathered bedrock			---	---	---	---	--

Table 14.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments 3-10 inches	Percentage passing sieve number--: 4	10	40	20
	In				Pct				
GnB:									
Gilpin----------	0-5	Silt loam	CL, CL-ML	A-4, A-6	0-5	80-95	75-90	70-85	65-
	5-14	Channery silt loam, channery silty clay loam, silty clay loam	CL, CL-ML, GC, SC	A-2, A-4, A-6	0-30	50-95	45-90	35-85	30-
	14-32	Channery silt loam, very channery silt loam, very channery silty clay loam	GC, GC-GM	A-1, A-2, A-4, A-6	0-35	25-55	20-50	15-45	15-
	32-36	Unweathered bedrock			---	---	---	---	--
GnC2:									
Gilpin----------	0-4	Silt loam	CL, CL-ML	A-4, A-6	0-5	80-95	75-90	70-85	65-
	4-14	Channery silt loam, channery silty clay loam, silty clay loam	CL, CL-ML, GC, SC	A-2, A-4, A-6	0-30	50-95	45-90	35-85	30-
	14-32	Channery silt loam, very channery silt loam, very channery silty clay loam	GC, GC-GM	A-1, A-2, A-4, A-6	0-35	25-55	20-50	15-45	15-
	32-36	Unweathered bedrock			---	---	---	---	--
GrB:									
Greenbriar------	0-10	Silt loam	CL, CL-ML, ML	A-4	0	95-100	90-100	85-100	70-
	10-26	Silt loam, silty clay loam, channery silty clay loam	CL, CL-ML, ML	A-4, A-6, A-7-6	0	95-100	85-100	80-100	70-
	26-48	Silt loam, silty clay loam, channery silty clay loam	CL, CL-ML, ML	A-4, A-6, A-7-6	0	95-100	85-100	80-100	70-
	48-52	Unweathered bedrock			---	---	---	---	--

Table 14.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments 3-10 inches	Percentage passing sieve number--			
			Unified	AASHTO		4	10	40	200
	In				Pct				
HgC:									
Hagerstown------	0-7	Silt loam	CL, CL-ML	A-4, A-6, A-7	0-15	85-100	80-100	80-100	70-9
	7-12	Silty clay loam, silty clay, clay loam	CH, CL	A-7	0-5	90-100	80-100	75-100	55-9
	12-40	Clay, silty clay, silty clay loam	CH, CL	A-6, A-7	0-5	85-100	80-100	75-100	75-9
	40-65	Clay, silty clay, silty clay loam	CH, CL	A-6, A-7	0-5	85-100	80-100	75-100	75-9
JeB, JeC:									
Jessietown------	0-8	Silt loam	CL, CL-ML, ML	A-4	0	95-100	95-100	85-100	70-9
	8-16	Silty clay loam, silt loam	CL, CL-ML, ML	A-4, A-6, A-7-6	0	95-100	85-100	80-100	70-9
	16-22	Channery silty clay loam, channery silty clay, silt loam	CL, CL-ML, GC-GM, ML	A-4, A-6, A-7-6	0	65-100	50-100	45-100	40-9
	22-26	Unweathered bedrock			---	---	---	---	---
Jm:									
Johnsburg-------	0-11	Silt loam	CL, ML	A-4, A-6	0	100	100	90-100	70-9
	11-24	Silty clay loam, silt loam	CL	A-6, A-7	0	100	100	95-100	85-9
	24-48	Loam, silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0-5	95-100	90-95	85-95	60-8
	48-52	Unweathered bedrock			---	---	---	---	---

Table 14.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments 3-10 inches	Percentage passing sieve number--			
			Unified	AASHTO		4	10	40	20
	In				Pct				
Jm:									
Mullins----------	0-6	Silt loam	CL, ML	A-4	0	95-100	95-100	85-100	75-
	6-18	Silt loam, silty clay loam	CL, CL-ML, ML	A-4, A-6	0	95-100	95-100	90-100	80-
	18-38	Silt loam, silty clay loam	CL, CL-ML, ML	A-4, A-6	0	95-100	95-100	90-100	80-
	38-55	Silty clay loam, silt loam, silty clay, very channery silty clay loam	CL, GM, ML, SM	A-4, A-6, A-7	0-10	70-100	65-100	55-100	45-
	55-59	Unweathered bedrock			---	---	---	---	--
Jr:									
Johnsburg--------	0-11	Silt loam	CL, ML	A-4, A-6	0	100	100	90-100	70-
	11-24	Silty clay loam, silt loam	CL	A-6, A-7	0	100	100	95-100	85-
	24-48	Loam, silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0-5	95-100	90-95	85-95	60-
	48-52	Unweathered bedrock			---	---	---	---	--
Robertsville----	0-6	Silt loam	ML	A-4	0	95-100	95-100	85-100	75-
	6-18	Silt loam, silty clay loam	CL, ML	A-4, A-6, A-7	0	95-100	95-100	90-100	80-
	18-36	Silty clay loam, silt loam	CL, ML	A-4, A-6, A-7	0	95-100	95-100	90-100	80-
	36-62	Silty clay loam, silty clay, silt loam	CH, CL, CL-ML	A-4, A-6, A-7	0-5	80-100	75-100	70-100	60-

Table 14.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments 3-10 inches	Percentage passing sieve number--			
			Unified	AASHTO		4	10	40	20
	In				Pct				
La:									
Lawrence--------	0-7	Silt loam	ML	A-4	0	100	95-100	90-100	80-
	7-24	Silty clay loam, silt loam	CL, CL-ML	A-4, A-6, A-7	0	100	95-100	90-100	80-
	24-45	Silty clay loam, silt loam	CL, CL-ML	A-4, A-6, A-7	0	100	95-100	90-100	80-
	45-65	Silty clay, silty clay loam, silt loam	CL, CL-ML, MH, ML	A-4, A-6, A-7	0	95-100	90-100	85-100	75-
Le:									
Lawrence--------	0-7	Silt loam	ML	A-4	0	100	95-100	90-100	80-
	7-24	Silty clay loam, silt loam	CL, CL-ML	A-4, A-6, A-7	0	100	95-100	90-100	80-
	24-45	Silty clay loam, silt loam	CL, CL-ML	A-4, A-6, A-7	0	100	95-100	90-100	80-
	45-65	Silty clay, silty clay loam, silt loam	CL, CL-ML, MH, ML	A-4, A-6, A-7	0	95-100	90-100	85-100	75-
Robertsville----	0-6	Silt loam	ML	A-4	0	95-100	95-100	85-100	75-
	6-18	Silt loam, silty clay loam	CL, ML	A-4, A-6, A-7	0	95-100	95-100	90-100	80-
	18-36	Silty clay loam, silt loam	CL, ML	A-4, A-6, A-7	0	95-100	95-100	90-100	80-
	36-62	Silty clay loam, silty clay, silt loam	CH, CL, CL-ML	A-4, A-6, A-7	0-5	80-100	75-100	70-100	60-

Table 14.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--			
			Unified	AASHTO	3-10 inches	4	10	40	20
	In				Pct				
LgC2:									
Lenberg----------	0-5	Silty clay loam	CL, CL-ML, ML	A-4, A-6, A-7	0-5	75-100	75-100	75-95	65-
	5-14	Silty clay loam, silty clay, gravelly clay	CH, CL	A-6, A-7	0-5	75-100	60-100	55-95	50-
	14-30	Silty clay, clay, gravelly clay	CH, CL, MH, ML	A-7	0-5	75-100	55-100	54-95	50-
	30-39	Channery silty clay, clay, silty clay	CH, CL, GC, SC	A-7	0-40	60-95	40-95	40-95	36-
	39-55	Weathered bedrock			---	---	---	---	--
LlB, LlC:									
Lily------------	0-6	Loam	CL-ML, ML	A-4	0-5	90-100	85-100	70-95	55-
	6-39	Clay loam, sandy clay loam, loam	CL, ML, SC, SM	A-4, A-6	0-5	90-100	85-100	75-100	40-
	39-43	Unweathered bedrock			---	---	---	---	--
LoB:									
Lowell----------	0-8	Silt loam	CL, CL-ML, ML	A-4	0	100	95-100	90-100	85-
	8-42	Silty clay, clay, silty clay loam	CH, CL, MH	A-6, A-7	0	100	95-100	90-100	85-
	42-52	Clay, silty clay	CH, CL, MH	A-7	0-10	95-100	90-100	85-100	75-
	52-56	Unweathered bedrock			---	---	---	---	--
LoC2:									
Lowell----------	0-6	Silt loam	CL, CL-ML, ML	A-4	0	100	95-100	90-100	85-
	6-42	Silty clay, clay, silty clay loam	CH, CL, MH	A-6, A-7	0	100	95-100	90-100	85-
	42-52	Clay, silty clay	CH, CL, MH	A-7	0-10	95-100	90-100	85-100	75-
	52-56	Unweathered bedrock			---	---	---	---	--

Table 14.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments 3-10 inches	Percentage passing sieve number--			
			Unified	AASHTO		4	10	40	20
	In				Pct				
LpD2:									
Lowell----------	0-6	Silt loam	CL, CL-ML, ML	A-4	0	100	95-100	90-100	85-
	6-42	Silty clay, clay, silty clay loam	CH, CL, MH	A-6, A-7	0	100	95-100	90-100	85-
	42-52	Clay, silty clay	CH, CL, MH	A-7	0-10	95-100	90-100	85-100	75-
	52-56	Unweathered bedrock			---	---	---	---	--
Faywood---------	0-6	Silty clay loam	CL, CL-ML, ML	A-6	0-15	100	95-100	90-100	85-
	6-30	Silty clay, clay, silty clay loam	CH, CL	A-7	0-15	90-100	90-100	85-100	75-
	30-34	Unweathered bedrock			---	---	---	---	--
LsB:									
Lowell----------	0-8	Silt loam	CL, CL-ML, ML	A-4	0	100	95-100	90-100	85-
	8-42	Silty clay, clay, silty clay loam	CH, CL, MH	A-6, A-7	0	100	95-100	90-100	85-
	42-52	Clay, silty clay	CH, CL, MH	A-7	0-10	95-100	90-100	85-100	75-
	52-56	Unweathered bedrock			---	---	---	---	--
LsC2:									
Lowell----------	0-6	Silt loam	CL, CL-ML, ML	A-4	0	100	95-100	90-100	85-
	6-42	Silty clay, clay, silty clay loam	CH, CL, MH	A-6, A-7	0	100	95-100	90-100	85-
	42-52	Clay, silty clay	CH, CL, MH	A-7	0-10	95-100	90-100	85-100	75-
	52-56	Unweathered bedrock			---	---	---	---	--
LtD2:									
Lowell----------	0-6	Silt loam	CL, CL-ML, ML	A-4	0	100	95-100	90-100	85-
	6-42	Silty clay, clay, silty clay loam	CH, CL, MH	A-6, A-7	0	100	95-100	90-100	85-
	42-52	Clay, silty clay	CH, CL, MH	A-7	0-10	95-100	90-100	85-100	75-
	52-56	Unweathered bedrock			---	---	---	---	--

Table 14.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments 3-10 inches	Percentage passing sieve number--: 4	10	40	20
	In				Pct				
LtD2:									
Faywood----------	0-6	Silty clay loam	CL, CL-ML, ML	A-6	0-15	100	95-100	90-100	85-
	6-30	Silty clay, clay, silty clay loam	CH, CL	A-7	0-15	90-100	90-100	85-100	75-
	30-34	Unweathered bedrock			---	---	---	---	--
Me:									
Melvin----------	0-8	Silt loam	CL, CL-ML, ML	A-4	0	95-100	90-100	80-100	80-
	8-22	Silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	95-100	90-100	80-100	80-
	22-65	Silt loam, silty clay loam, loam	CL, CL-ML	A-4, A-6	0	85-100	80-100	70-100	60-
MoB:									
Monongahela-----	0-9	Loam	CL-ML, ML, SC-SM, SM	A-4	0-5	90-100	85-100	75-100	45-
	9-18	Silt loam, loam, clay loam, gravelly loam	CL, CL-ML, ML	A-4, A-6	0-15	90-100	80-100	75-100	70-
	18-50	Silt loam, loam, sandy clay loam, gravelly loam	CL, ML, SC, SM	A-4, A-6	0-10	80-100	60-100	55-95	45-
	50-65	Silt loam, loam, clay loam, gravelly sandy loam	CL, ML, SC, SM	A-4, A-6	10-20	75-100	60-90	60-85	40-
Ne:									
Newark----------	0-8	Silt loam	CL, CL-ML, ML	A-4	0	95-100	90-100	80-100	55-
	8-16	Silt loam, silty clay loam	CL, CL-ML, ML	A-4, A-6, A-7	0	95-100	90-100	85-100	70-
	16-62	Silt loam, silty clay loam	CL, CL-ML, ML	A-4, A-6, A-7	0-3	75-100	70-100	65-100	55-

Table 14.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments 3-10 inches	Percentage passing sieve number--			
			Unified	AASHTO		4	10	40	200
	In				Pct				
NhB:									
Nicholson-------	0-8	Silt loam	CL, CL-ML, ML	A-4	0	95-100	95-100	85-100	80-9
	8-24	Silty clay loam, silt loam	CL, CL-ML	A-4, A-6, A-7	0	95-100	85-100	85-100	80-1
	24-44	Silty clay loam, silt loam	CL, CL-ML	A-4, A-6, A-7	0	95-100	90-100	80-100	75-1
	44-65	Silty clay, clay, channery clay	CL, CH	A-6, A-7	0-10	80-100	70-100	60-100	55-1
	65-69	Unweathered bedrock			---	---	---	---	---
NhC2:									
Nicholson-------	0-6	Silt loam	CL, CL-ML, ML	A-4	0	95-100	95-100	85-100	80-9
	6-24	Silty clay loam, silt loam	CL, CL-ML	A-4, A-6, A-7	0	95-100	85-100	85-100	80-1
	24-44	Silty clay loam, silt loam	CL, CL-ML	A-4, A-6, A-7	0	95-100	90-100	80-100	75-1
	44-65	Silty clay, clay, channery clay	CL, CH	A-6, A-7	0-10	80-100	70-100	60-100	55-1
	65-69	Unweathered bedrock			---	---	---	---	---
No:									
Nolin-----------	0-8	Silt loam	CL, CL-ML	A-4, A-6	0	100	95-100	90-100	80-1
	8-46	Silt loam, silty clay loam	CL, CL-ML	A-4, A-6, A-7	0	100	95-100	85-100	75-1
	46-65	Loam, silt loam, gravelly loam	CL, CL-ML, GM, ML	A-4, A-6	0-10	50-100	50-100	40-95	35-5

Table 14.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--			
			Unified	AASHTO	3-10 inches	4	10	40	20
	In				Pct				
OtB, OwB:									
Otwell----------	0-7	Silt loam	CL, CL-ML	A-4, A-6	0	100	100	90-100	70-
	7-22	Silty clay loam, silt loam	CL, CL-ML	A-4, A-6	0	100	100	95-100	70-
	22-46	Silty clay loam, loam, silt loam	CL	A-6, A-7	0	95-100	95-100	85-100	65-
	46-65	Silty clay loam, clay loam	CL	A-6, A-7	0	95-100	90-100	85-100	65-
PrB, PrC:									
Pricetown-------	0-9	Silt loam	CL-ML, ML	A-4	0	100	95-100	90-100	85-
	9-19	Silt loam, silty clay loam	CL	A-4, A-6	0	100	95-100	90-100	85-
	19-42	Silt loam, silty clay loam	CL	A-4, A-6	0	100	95-100	90-100	85-
	42-65	Silty clay loam, silty clay, clay	CL, MH	A-6, A-7	0-15	75-100	65-100	60-100	50-
Rb:									
Robertsville----	0-6	Silt loam	ML	A-4	0	95-100	95-100	85-100	75-
	6-18	Silt loam, silty clay loam	CL, ML	A-4, A-6, A-7	0	95-100	95-100	90-100	80-
	18-36	Silty clay loam, silt loam	CL, ML	A-4, A-6, A-7	0	95-100	95-100	90-100	80-
	36-62	Silty clay loam, silty clay, silt loam	CH, CL, CL-ML	A-4, A-6, A-7	0-5	80-100	75-100	70-100	60-

Table 14.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments 3-10 inches	Percentage passing sieve number-- 4	10	40	200
	In				Pct				
RoF:									
Rock outcrop.									
Fairmount-------	0-9	Silty clay loam	CL	A-6, A-7	8-50	80-100	70-100	65-100	60-[illegible]
	9-18	Flaggy silty clay loam, flaggy clay, flaggy silty clay	CH, CL	A-7	8-50	80-100	70-100	65-100	60-[illegible]
	18-22	Unweathered bedrock			---	---	---	---	---
SaB, SaC, SdB, SdC:									
Sandview-------	0-10	Silt loam	CL, CL-ML, ML	A-4	0	100	95-100	90-100	80-[illegible]
	10-38	Silt loam, silty clay loam	CL, CL-ML	A-4, A-6, A-7	0	100	95-100	90-100	85-[illegible]
	38-74	Silty clay, clay	CH, CL	A-7	0-10	90-100	90-100	85-100	75-[illegible]
SeC2:									
Shrouts---------	0-4	Silty clay	CL-ML, ML	A-6, A-7	0	100	90-100	85-100	80-[illegible]
	4-26	Clay, silty clay	CL, CH	A-7	0-10	90-100	90-100	85-100	80-[illegible]
	26-35	Weathered bedrock			---	---	---	---	---
SfD3:									
Shrouts---------	0-4	Silty clay	CL-ML, ML	A-6, A-7	0	100	90-100	85-100	80-[illegible]
	4-26	Clay, silty clay	CL, CH	A-7	0-10	90-100	90-100	85-100	80-[illegible]
	26-35	Weathered bedrock			---	---	---	---	---
Cynthiana-------	0-4	Silty clay loam	CL, CL-ML, ML	A-4, A-6, A-7	0-30	70-100	65-100	60-100	55-[illegible]
	4-16	Flaggy clay, flaggy silty clay, clay	CH, CL, MH	A-7	5-30	70-100	65-100	60-100	55-[illegible]
	16-20	Unweathered bedrock			---	---	---	---	---

Table 14.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--			
			Unified	AASHTO	3-10 inches	4	10	40	20
	In				Pct				
SgF3:									
Shrouts---------	0-4	Silty clay	CL-ML, ML	A-6, A-7	0	100	90-100	85-100	80-
	4-26	Clay, silty clay	CH, CL	A-7	0-10	90-100	90-100	85-100	80-
	26-35	Weathered bedrock			---	---	---	---	--
Garlin----------	0-7	Loam	CL, CL-ML, ML	A-4, A-6	0-10	85-95	70-90	70-90	55-
	7-18	Silt loam, loam, silty clay loam	CL, CL-ML, ML	A-4, A-6	0-15	80-90	70-90	65-90	50-
	18-23	Weathered bedrock			---	---	---	---	--
	23-25	Unweathered bedrock			---	---	---	---	--
Cynthiana-------	0-4	Silty clay loam	CL, CL-ML, ML	A-4, A-6, A-7	0-30	70-100	65-100	60-100	55-
	4-16	Flaggy clay, flaggy silty clay, clay	CH, CL, MH	A-7	5-30	70-100	65-100	60-100	55-
	16-20	Unweathered bedrock			---	---	---	---	--
Sk:									
Skidmore--------	0-8	Very gravelly silt loam	GM, ML, SM	A-2, A-4	0-10	60-90	40-85	40-75	25-
	8-32	Gravelly fine sandy loam, very channery sandy loam, very gravelly loam	GM, GP-GM	A-1, A-2	5-30	35-60	20-50	15-40	10-
	32-65	Gravelly fine sandy loam, very channery sandy loam, extremely gravelly loam	GM, GP-GM	A-1, A-2	5-30	35-60	20-50	15-40	10-

Table 14.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments 3-10 inches	Percentage passing sieve number-- 4	10	40	20
	In				Pct				
TeB:									
Teddy----------	0-7	Silt loam	CL, CL-ML, ML	A-4	0	95-100	95-100	90-95	80-
	7-30	Silt loam, loam, silty clay loam	CL, CL-ML	A-4, A-6	0	95-100	95-100	90-95	75-
	30-48	Silt loam, loam, clay loam	CL, CL-ML	A-4, A-6	0	95-100	95-100	90-95	75-
	48-65	Clay loam, silty clay loam, silty clay	CL, CL-ML, ML	A-4, A-6, A-7	0	85-100	75-100	70-95	55-
TlB, TlC:									
Tilsit---------	0-6	Silt loam	CL, CL-ML	A-4, A-6	0	90-100	85-100	75-100	60-
	6-20	Silt loam, silty clay loam, loam	CL, CL-ML	A-4, A-6	0	90-100	85-100	75-100	65-
	20-36	Silt loam, silty clay loam, loam	CL, CL-ML	A-4, A-6, A-7	0	90-100	85-100	75-100	65-
	36-42	Silt loam, silty clay loam, silty clay	CH, CL, CL-ML	A-4, A-6, A-7	0-30	70-100	65-85	60-85	55-
	42-46	Weathered bedrock			---	---	---	---	--
	46-50	Unweathered bedrock			---	---	---	---	--
TpB:									
Trappist--------	0-6	Silt loam	CL, CL-ML	A-4, A-6	0	95-100	90-100	80-100	60-
	6-26	Silty clay, clay, channery silty clay	CH, CL	A-6, A-7	0	80-100	60-100	55-100	50-
	26-38	Very channery clay, very channery silty clay, channery clay	CH, CL, GC, SC	A-2, A-6, A-7	0-5	30-75	20-65	20-60	15-
	38-40	Unweathered bedrock			---	---	---	---	--

Table 14.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments 3-10 inches	Percentage passing sieve number--			
			Unified	AASHTO		4	10	40	20
	In				Pct				
TpC2:									
Trappist--------	0-7	Silty clay loam	CL, CL-ML	A-4, A-6	0	95-100	90-100	80-100	60-
	7-26	Silty clay, clay, channery silty clay	CH, CL	A-6, A-7	0	80-100	60-100	55-100	50-
	26-35	Very channery clay, very channery silty clay, channery clay	CH, CL, GC, SC	A-2, A-6, A-7	0-5	30-75	20-65	20-60	15-
	35-39	Unweathered bedrock			---	---	---	---	--
TrD2:									
Trappist--------	0-7	Silty clay loam	CL, CL-ML	A-4, A-6	0	95-100	90-100	80-100	60-
	7-26	Silty clay, clay, channery silty clay	CH, CL	A-6, A-7	0	80-100	60-100	55-100	50-
	26-35	Very channery clay, very channery silty clay, channery clay	CH, CL, GC, SC	A-2, A-6, A-7	0-5	30-75	20-65	20-60	15-
	35-39	Unweathered bedrock			---	---	---	---	--
Colyer----------	0-9	Silty clay loam	CL, CL-ML, ML	A-4, A-6	0	80-100	80-95	65-95	55-
	9-14	Channery clay, very channery silty clay, very channery silty clay loam	GC, GM	A-2, A-6, A-7	0-10	25-60	20-50	20-50	15-
	14-18	Unweathered bedrock			---	---	---	---	--
W.									
Water									

Table 14.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Frag- ments	Percentage passing sieve number--			
			Unified	AASHTO	3-10 inches	4	10	40	20
	In				Pct				
Yo:									
Yosemite--------	0-6	Gravelly silt loam	GC-GM, GM, ML	A-2, A-4	0-10	60-80	55-75	40-65	30-
	6-21	Very gravelly loam, very gravelly sandy clay loam, very gravelly silt loam	GC-GM, GM, SM	A-1, A-2, A-4	0-10	50-75	45-70	40-65	20-
	21-65	Extremely gravelly loam, very gravelly loam, extremely gravelly clay loam	GC, GC-GM, GM	A-1, A-2, A-4, A-6	0-10	40-60	30-50	20-50	20-

Table 15.—Physical Properties of the Soils

(Entries under "Erosion factors--T" apply to the entire profile)

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Kf	T
	In	Pct	g/cc	In/hr	In/in	Pct	Pct			
AlB:										
Allegheny-------	0-7	15-27	1.20-1.40	0.60-2.00	0.12-0.22	0.0-2.9	1.0-3.0	.32	.32	4
	7-17	18-35	1.20-1.50	0.60-2.00	0.13-0.18	0.0-2.9	0.0-0.8	.28	.28	
	17-80	10-35	1.20-1.40	0.60-2.00	0.08-0.17	0.0-2.9	0.0-0.5	.28	.28	
AlC2:										
Allegheny-------	0-5	15-27	1.20-1.40	0.60-2.00	0.12-0.22	0.0-2.9	1.0-3.0	.32	.32	4
	5-17	18-35	1.20-1.50	0.60-2.00	0.13-0.18	0.0-2.9	0.0-0.8	.28	.28	
	17-80	10-35	1.20-1.40	0.60-2.00	0.08-0.17	0.0-2.9	0.0-0.5	.28	.28	
BaB:										
Beasley---------	0-8	10-27	1.20-1.40	0.60-2.00	0.18-0.23	0.0-2.9	0.5-4.0	.43	.43	3
	8-16	40-60	1.30-1.55	0.06-0.60	0.12-0.18	3.0-5.9	0.0-0.8	.28	.28	
	16-45	40-60	1.50-1.70	0.06-0.60	0.09-0.15	3.0-5.9	0.0-0.5	.28	.28	
	45-50	---	---	0.00-0.20	---	---	---	---	---	
BbC2:										
Beasley---------	0-8	27-40	1.20-1.40	0.20-2.00	0.14-0.23	0.0-2.9	0.5-2.0	.32	.32	3
	8-16	40-60	1.30-1.55	0.06-0.60	0.12-0.18	3.0-5.9	0.0-0.8	.28	.28	
	16-45	40-60	1.50-1.70	0.06-0.60	0.09-0.15	3.0-5.9	0.0-0.5	.28	.28	
	45-50	---	---	0.00-0.20	---	---	---	---	---	
BeB:										
Berea-----------	0-8	12-27	1.20-1.40	0.60-2.00	0.18-0.23	0.0-2.9	0.5-4.0	.37	.37	3
	8-26	18-35	1.25-1.45	0.20-2.00	0.16-0.22	0.0-2.9	0.0-0.8	.32	.32	
	26-30	---	---	0.00-0.20	---	---	---	---	---	
	30-32	---	---	0.00-0.01	---	---	---	---	---	
Bo:										
Boonesboro------	0-7	15-27	1.20-1.40	0.60-2.00	0.18-0.23	0.0-2.9	3.0-5.0	.37	.37	3
	7-37	18-35	1.20-1.40	6.00-20.00	0.06-0.12	0.0-2.9	0.5-2.0	.17	.37	
	37-41	---	---	0.00-0.06	---	---	---	---	---	
CaE2:										
Caneyville------	0-3	10-27	1.20-1.40	0.60-2.00	0.15-0.22	0.0-2.9	1.0-4.0	.43	.43	3
	3-36	36-60	1.35-1.60	0.06-0.20	0.12-0.18	3.0-5.9	0.2-0.8	.28	.28	
	36-40	---	---	0.00-0.06	---	---	---	---	---	
CeB, CeC:										
Carpenter-------	0-12	10-27	1.20-1.40	2.00-6.00	0.16-0.22	0.0-2.9	1.0-4.0	.28	.32	4
	12-42	18-35	1.20-1.50	0.60-2.00	0.10-0.20	0.0-2.9	0.2-0.8	.28	.32	
	42-52	28-50	1.20-1.50	0.06-0.20	0.10-0.20	0.0-2.9	0.0-0.8	.28	.32	
	52-65	---	---	0.00-0.20	---	---	---	---	---	
CgE2:										
Carpenter-------	0-12	10-27	1.20-1.40	2.00-6.00	0.16-0.22	0.0-2.9	1.0-4.0	.28	.32	4
	12-42	18-35	1.20-1.50	0.60-2.00	0.10-0.20	0.0-2.9	0.2-0.8	.28	.32	
	42-52	28-50	1.20-1.50	0.06-0.20	0.10-0.20	0.0-2.9	0.0-0.8	.28	.32	
	52-65	---	---	0.00-0.20	---	---	---	---	---	
Lenberg---------	0-5	12-27	1.30-1.50	0.60-2.00	0.18-0.23	0.0-2.9	0.5-3.0	.43	.43	3
	5-14	35-60	1.40-1.60	0.20-0.60	0.10-0.19	3.0-5.9	0.2-1.0	.28	.28	
	14-30	40-60	1.40-1.65	0.20-0.60	0.10-0.18	3.0-5.9	0.2-0.8	.28	.28	
	30-39	40-60	1.40-1.65	0.20-0.60	0.10-0.16	3.0-5.9	0.0-0.5	.28	.37	
	39-55	---	---	0.00-0.20	---	---	---	---	---	

Table 15.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors		
								Kw	Kf	T
	In	Pct	g/cc	In/hr	In/in	Pct	Pct			
ChB, ChC:										
Chenault	0-7	10-27	1.20-1.40	2.00-6.00	0.16-0.22	0.0-2.9	1.0-4.0	.28	.32	4
	7-48	18-35	1.20-1.50	0.60-2.00	0.10-0.20	0.0-2.9	0.2-0.8	.28	.32	
	48-58	40-55	1.30-1.60	0.20-0.57	0.07-0.16	3.0-5.9	0.0-0.8	.28	.28	
	58-60	---	---	0.00-0.06	---	---	---	---	---	
CkC:										
Chenault	0-7	10-27	1.20-1.40	2.00-6.00	0.16-0.22	0.0-2.9	1.0-4.0	.28	.32	4
	7-48	18-35	1.20-1.50	0.60-2.00	0.10-0.20	0.0-2.9	0.2-0.8	.28	.32	
	48-58	40-55	1.30-1.60	0.20-0.57	0.07-0.16	3.0-5.9	0.0-0.8	.28	.28	
	58-60	---	---	0.00-0.06	---	---	---	---	---	
Lowell	0-6	12-27	1.20-1.40	0.60-2.00	0.18-0.23	0.0-2.9	1.0-4.0	.37	.37	3
	6-42	35-60	1.30-1.60	0.20-2.00	0.13-0.19	3.0-5.9	0.0-0.8	.28	.28	
	42-52	40-60	1.50-1.60	0.20-0.60	0.12-0.17	3.0-5.9	0.0-0.5	.28	.28	
	52-56	---	---	0.00-0.06	---	---	---	---	---	
ClD2:										
Chenault	0-5	10-27	1.20-1.40	2.00-6.00	0.16-0.22	0.0-2.9	1.0-4.0	.28	.32	4
	5-48	18-35	1.20-1.50	0.60-2.00	0.10-0.20	0.0-2.9	0.2-0.8	.28	.32	
	48-58	40-55	1.30-1.60	0.20-0.57	0.07-0.16	3.0-5.9	0.0-0.8	.28	.28	
	58-60	---	---	0.00-0.06	---	---	---	---	---	
Faywood	0-6	27-40	1.30-1.40	0.60-2.00	0.18-0.22	0.0-2.9	1.0-4.0	.37	.37	3
	6-30	35-60	1.35-1.45	0.06-0.60	0.12-0.17	3.0-5.9	0.0-0.5	.28	.28	
	30-34	---	---	0.00-0.06	---	---	---	---	---	
CmB:										
Christian	0-8	12-27	1.20-1.40	2.00-6.00	0.11-0.18	0.0-2.9	1.0-3.0	.37	.37	3
	8-18	25-40	1.20-1.50	0.20-0.57	0.14-0.22	3.0-5.9	0.2-0.8	.28	.32	
	18-48	40-60	1.30-1.60	0.06-0.57	0.10-0.16	3.0-5.9	0.0-0.5	.28	.28	
	48-90	40-60	1.30-1.60	0.06-0.57	0.10-0.16	3.0-5.9	0.0-0.5	.28	.28	
CmC2:										
Christian	0-5	12-27	1.20-1.40	2.00-6.00	0.11-0.18	0.0-2.9	1.0-3.0	.37	.37	3
	5-18	25-40	1.20-1.50	0.20-0.57	0.14-0.22	3.0-5.9	0.2-0.8	.28	.32	
	18-48	40-60	1.30-1.60	0.06-0.57	0.10-0.16	3.0-5.9	0.0-0.5	.28	.28	
	48-90	40-60	1.30-1.60	0.06-0.57	0.10-0.16	3.0-5.9	0.0-0.5	.28	.28	
CoD2:										
Christian	0-6	27-40	1.20-1.50	0.60-2.00	0.14-0.22	0.0-2.9	0.5-2.0	.37	.37	3
	6-18	25-40	1.20-1.50	0.20-0.57	0.14-0.22	3.0-5.9	0.0-0.8	.28	.32	
	18-48	40-60	1.30-1.60	0.06-0.57	0.10-0.16	3.0-5.9	0.0-0.5	.28	.28	
	48-90	40-60	1.30-1.60	0.06-0.57	0.10-0.16	3.0-5.9	0.0-0.5	.28	.28	
CpF2:										
Colyer	0-9	27-40	1.20-1.50	0.60-2.00	0.15-0.21	0.0-2.9	1.0-4.0	.37	.37	2
	9-14	35-59	1.30-1.60	0.06-0.20	0.03-0.10	0.0-2.9	1.0-4.0	.17	.28	
	14-18	---	---	0.00-0.20	---	---	---	---	---	
Trappist	0-7	27-40	1.20-1.40	0.60-2.00	0.15-0.23	0.0-2.9	0.5-2.0	.32	.32	2
	7-26	30-60	1.40-1.65	0.20-0.60	0.08-0.18	3.0-5.9	0.5-2.0	.28	.28	
	26-35	35-60	1.40-1.60	0.06-0.20	0.05-0.12	3.0-5.9	0.5-2.0	.24	.28	
	35-39	---	---	0.00-0.20	---	---	---	---	---	
CrB, CrC:										
Crider	0-8	15-27	1.20-1.40	0.60-2.00	0.19-0.23	0.0-2.9	2.0-4.0	.32	.32	5
	8-32	18-35	1.20-1.45	0.60-2.00	0.18-0.23	0.0-2.9	0.5-1.0	.28	.28	
	32-64	30-60	1.20-1.55	0.60-2.00	0.12-0.18	3.0-5.9	0.0-0.5	.28	.28	

Table 15.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T
	In	Pct	g/cc	In/hr	In/in	Pct	Pct			
CuB:										
Culleoka--------	0-12	15-27	1.20-1.40	0.60-6.00	0.14-0.20	0.0-2.9	1.0-4.0	.32	.32	3
	12-32	18-35	1.20-1.50	0.60-6.00	0.12-0.20	0.0-2.9	0.2-0.8	.28	.32	
	32-38	18-45	1.20-1.50	0.60-6.00	0.05-0.14	0.0-2.9	0.0-0.5	.17	.28	
	38-44	---	---	0.00-0.06	---	---	---	---	---	
CuC2, CuD2:										
Culleoka--------	0-7	15-27	1.20-1.40	0.60-6.00	0.14-0.20	0.0-2.9	1.0-4.0	.32	.32	3
	7-32	18-35	1.20-1.50	0.60-6.00	0.12-0.20	0.0-2.9	0.2-0.8	.28	.32	
	32-38	18-45	1.20-1.50	0.60-6.00	0.05-0.14	0.0-2.9	0.0-0.5	.17	.28	
	38-44	---	---	0.00-0.06	---	---	---	---	---	
CyF2:										
Cynthiana-------	0-6	27-40	1.20-1.40	0.60-2.00	0.15-0.20	3.0-5.9	1.0-4.0	.37	.37	2
	6-16	40-60	1.35-1.60	0.20-0.60	0.08-0.15	3.0-5.9	1.0-4.0	.28	.28	
	16-20	---	---	0.00-0.06	---	---	---	---	---	
Faywood---------	0-6	27-40	1.30-1.40	0.60-2.00	0.18-0.22	0.0-2.9	1.0-4.0	.37	.37	3
	6-30	35-60	1.35-1.45	0.06-0.60	0.12-0.17	3.0-5.9	0.0-0.5	.28	.28	
	30-34	---	---	0.00-0.06	---	---	---	---	---	
DAM.										
Dam										
DoB:										
Donerail--------	0-14	12-27	1.20-1.40	0.60-2.00	0.19-0.23	0.0-2.9	2.0-5.0	.37	.37	4
	14-45	18-40	1.30-1.45	0.06-0.20	0.18-0.23	0.0-2.9	1.0-3.0	.28	.28	
	45-65	35-60	1.30-1.45	0.06-0.20	0.15-0.20	3.0-5.9	0.5-2.0	.28	.28	
EdD2:										
Eden------------	0-5	27-40	1.45-1.65	0.06-0.60	0.11-0.17	3.0-5.9	0.5-3.0	.17	.28	3
	5-24	40-60	1.45-1.65	0.06-0.20	0.08-0.13	3.0-5.9	0.0-0.8	.28	.28	
	24-34	---	---	0.00-0.20	---	---	---	---	---	
EfF2:										
Eden------------	0-5	27-40	1.45-1.65	0.06-0.60	0.11-0.17	3.0-5.9	0.5-3.0	.17	.28	3
	5-24	40-60	1.45-1.65	0.06-0.20	0.08-0.13	3.0-5.9	0.0-0.8	.28	.28	
	24-34	---	---	0.00-0.20	---	---	---	---	---	
Culleoka--------	0-4	15-27	1.20-1.40	0.60-6.00	0.14-0.20	0.0-2.9	1.0-4.0	.28	.32	3
	4-21	18-35	1.20-1.50	0.60-6.00	0.12-0.20	0.0-2.9	0.5-1.0	.28	.32	
	21-23	---	---	0.00-0.06	---	---	---	---	---	
EkB, EkC, EmB:										
Elk-------------	0-8	10-27	1.20-1.40	0.60-2.00	0.19-0.23	0.0-2.9	0.5-3.0	.37	.37	5
	8-44	18-34	1.20-1.50	0.60-2.00	0.18-0.22	0.0-2.9	0.0-0.8	.28	.28	
	44-65	15-40	1.20-1.50	0.60-2.00	0.14-0.20	0.0-2.9	0.0-0.5	.28	.32	
FaC2:										
Fairmount-------	0-9	27-40	1.20-1.40	0.06-0.20	0.12-0.20	3.0-5.9	3.0-7.0	.37	.37	2
	9-18	35-60	1.40-1.60	0.06-0.20	0.10-0.18	3.0-5.9	1.0-3.0	.28	.37	
	18-22	---	---	0.00-0.06	---	---	---	---	---	

Table 15.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T
	In	Pct	g/cc	In/hr	In/in	Pct	Pct			
FdF2:										
Fairmount-------	0-9	27-40	1.20-1.40	0.06-0.20	0.12-0.20	3.0-5.9	3.0-7.0	.37	.37	2
	9-18	35-60	1.40-1.60	0.06-0.20	0.10-0.18	3.0-5.9	1.0-3.0	.28	.37	
	18-22	---	---	0.00-0.06	---	---	---	---	---	
Faywood---------	0-6	27-40	1.30-1.40	0.60-2.00	0.18-0.22	0.0-2.9	1.0-4.0	.37	.37	3
	6-30	35-60	1.35-1.45	0.06-0.60	0.12-0.17	3.0-5.9	0.0-0.5	.28	.28	
	30-34	---	---	0.00-0.06	---	---	---	---	---	
Rock outcrop.										
FeC2, FeD2:										
Faywood---------	0-6	27-40	1.30-1.40	0.60-2.00	0.18-0.22	0.0-2.9	1.0-4.0	.37	.37	3
	6-30	35-60	1.35-1.45	0.06-0.60	0.12-0.17	3.0-5.9	0.0-0.5	.28	.28	
	30-34	---	---	0.00-0.06	---	---	---	---	---	
Cynthiana-------	0-6	27-40	1.20-1.40	0.60-2.00	0.15-0.20	3.0-5.9	1.0-4.0	.37	.37	2
	6-16	40-60	1.35-1.60	0.20-0.60	0.08-0.15	3.0-5.9	1.0-4.0	.28	.28	
	16-20	---	---	0.00-0.06	---	---	---	---	---	
FfC2, FfD2:										
Faywood---------	0-6	27-40	1.30-1.40	0.60-2.00	0.18-0.22	0.0-2.9	1.0-4.0	.37	.37	3
	6-30	35-60	1.35-1.45	0.06-0.60	0.12-0.17	3.0-5.9	0.0-0.5	.28	.28	
	30-34	---	---	0.00-0.06	---	---	---	---	---	
Fairmount-------	0-9	27-40	1.20-1.40	0.06-0.20	0.12-0.20	3.0-5.9	3.0-7.0	.37	.37	2
	9-18	35-60	1.40-1.60	0.06-0.20	0.10-0.18	3.0-5.9	1.0-3.0	.28	.37	
	18-22	---	---	0.00-0.06	---	---	---	---	---	
FoD2, FoF2:										
Faywood---------	0-6	27-40	1.30-1.40	0.60-2.00	0.18-0.22	0.0-2.9	1.0-4.0	.37	.37	3
	6-30	35-60	1.35-1.45	0.06-0.60	0.12-0.17	3.0-5.9	0.0-0.5	.28	.28	
	30-34	---	---	0.00-0.06	---	---	---	---	---	
Shrouts---------	0-4	27-40	1.40-1.55	0.06-0.20	0.15-0.20	0.0-2.9	0.5-3.0	.43	.43	2
	4-26	40-65	1.40-1.65	0.06-0.20	0.13-0.17	3.0-5.9	0.0-0.5	.28	.37	
	26-35	---	---	0.00-0.60	---	---	---	---	---	
FrB, FrC:										
Frankstown------	0-8	15-27	1.20-1.40	0.60-2.00	0.16-0.20	0.0-2.9	1.0-3.0	.28	.37	3
	8-16	25-35	1.30-1.50	0.60-2.00	0.14-0.20	3.0-5.9	0.0-0.5	.28	.28	
	16-44	25-45	1.30-1.50	0.60-2.00	0.12-0.16	3.0-5.9	0.0-0.5	.28	.32	
	44-46	---	---	0.00-0.06	---	---	---	---	---	
FrD2:										
Frankstown------	0-5	15-27	1.20-1.40	0.60-2.00	0.16-0.20	0.0-2.9	1.0-3.0	.28	.37	3
	5-25	25-35	1.30-1.50	0.60-2.00	0.14-0.20	3.0-5.9	0.0-0.5	.28	.28	
	25-45	25-45	1.30-1.50	0.60-2.00	0.12-0.16	3.0-5.9	0.0-0.5	.28	.32	
	45-47	---	---	0.00-0.06	---	---	---	---	---	
GaC2, GaD2:										
Garlin----------	0-7	7-27	1.20-1.40	0.60-2.00	0.14-0.20	0.0-2.9	0.5-3.0	.32	.32	2
	7-18	18-35	1.20-1.45	0.60-2.00	0.10-0.18	0.0-2.9	0.5-3.0	.32	.32	
	18-23	---	---	0.00-0.20	---	---	---	---	---	
	23-25	---	---	0.00-0.00	---	---	---	---	---	
Shrouts---------	0-4	27-40	1.40-1.55	0.06-0.20	0.15-0.20	0.0-2.9	0.5-3.0	.43	.43	2
	4-26	40-65	1.40-1.65	0.06-0.20	0.13-0.17	3.0-5.9	0.0-0.5	.28	.37	
	26-35	---	---	0.00-0.60	---	---	---	---	---	

Table 15.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T
	In	Pct	g/cc	In/hr	In/in	Pct	Pct			
GmF:										
Garmon----------	0-3	7-27	1.20-1.40	2.00-6.00	0.05-0.16	0.0-2.9	0.5-3.0	.28	.32	3
	3-26	18-34	1.20-1.50	2.00-6.00	0.05-0.16	0.0-2.9	0.5-0.8	.28	.32	
	26-30	---	---	0.00-0.20	---	---	---	---	---	
GnB:										
Gilpin----------	0-5	15-27	1.20-1.40	0.60-2.00	0.12-0.18	0.0-2.9	0.5-4.0	.32	.32	3
	5-14	18-35	1.20-1.50	0.60-2.00	0.12-0.16	0.0-2.9	0.2-0.8	.24	.28	
	14-32	15-35	1.20-1.50	0.60-2.00	0.08-0.12	0.0-2.9	0.0-0.5	.24	.32	
	32-36	---	---	0.00-0.20	---	---	---	---	---	
GnC2:										
Gilpin----------	0-4	15-27	1.20-1.40	0.60-2.00	0.12-0.18	0.0-2.9	0.5-4.0	.32	.32	3
	4-14	18-35	1.20-1.50	0.60-2.00	0.12-0.16	0.0-2.9	0.2-0.8	.24	.28	
	14-32	15-35	1.20-1.50	0.60-2.00	0.08-0.12	0.0-2.9	0.0-0.5	.24	.32	
	32-36	---	---	0.00-0.20	---	---	---	---	---	
GrB:										
Greenbriar------	0-10	12-27	1.20-1.40	0.60-2.00	0.19-0.23	0.0-2.9	0.5-4.0	.43	.43	4
	10-26	18-35	1.20-1.50	0.60-2.00	0.18-0.23	0.0-2.9	0.0-0.8	.32	.32	
	26-48	18-35	1.20-1.50	0.60-2.00	0.18-0.23	0.0-2.9	0.0-0.8	.32	.32	
	48-52	---	---	0.00-0.20	---	---	---	---	---	
HgC:										
Hagerstown------	0-7	15-27	1.20-1.40	0.60-6.00	0.16-0.24	0.0-2.9	1.0-5.0	.32	.32	4
	7-12	25-60	1.20-1.60	0.20-0.57	0.10-0.24	3.0-5.9	0.2-0.8	.28	.28	
	12-40	35-60	1.20-1.60	0.06-0.57	0.10-0.24	3.0-5.9	0.0-0.5	.28	.28	
	40-65	35-60	1.20-1.60	0.06-0.57	0.10-0.24	3.0-5.9	0.0-0.5	.28	.28	
JeB, JeC:										
Jessietown------	0-8	12-27	1.20-1.40	0.60-2.00	0.19-0.23	0.0-2.9	0.5-4.0	.37	.37	3
	8-16	12-34	1.20-1.50	0.60-2.00	0.18-0.23	0.0-2.9	0.5-2.0	.28	.32	
	16-22	15-45	1.20-1.50	0.60-2.00	0.12-0.20	0.0-2.9	0.2-0.8	.28	.32	
	22-26	---	---	0.00-0.20	---	---	---	---	---	
Jm:										
Johnsburg-------	0-11	12-20	1.30-1.45	0.60-2.00	0.20-0.24	0.0-2.9	1.0-2.0	.43	.43	3
	11-24	24-32	1.40-1.55	0.60-2.00	0.18-0.22	3.0-5.9	0.2-0.8	.43	.43	
	24-48	18-35	1.60-1.80	0.00-0.06	0.00-0.02	0.0-2.9	0.0-0.5	.43	.43	
	48-52	---	---	---	---	---	---	---	---	
Mullins---------	0-6	12-27	1.20-1.40	0.60-2.00	0.19-0.23	0.0-2.9	1.0-4.0	.43	.43	3
	6-18	18-35	1.40-1.60	0.60-2.00	0.18-0.23	0.0-2.9	0.5-1.0	.43	.43	
	18-38	18-35	1.50-1.70	0.00-0.06	0.00-0.02	0.0-2.9	0.2-0.8	.43	.43	
	38-55	18-60	1.50-1.70	0.20-2.00	0.00-0.02	0.0-2.9	0.2-0.8	.37	.37	
	55-59	---	---	---	---	---	---	---	---	
Jr:										
Johnsburg-------	0-11	12-20	1.30-1.45	0.60-2.00	0.20-0.24	0.0-2.9	1.0-2.0	.43	.43	3
	11-24	24-32	1.40-1.55	0.60-2.00	0.18-0.22	3.0-5.9	0.2-0.8	.43	.43	
	24-48	18-35	1.60-1.80	0.00-0.06	0.00-0.02	0.0-2.9	0.0-0.5	.43	.43	
	48-52	---	---	---	---	---	---	---	---	
Robertsville----	0-6	12-27	1.30-1.50	0.60-2.00	0.19-0.23	0.0-2.9	1.0-3.0	.43	.43	3
	6-18	15-35	1.40-1.60	0.60-2.00	0.18-0.22	0.0-2.9	0.2-0.8	.43	.43	
	18-36	18-35	1.50-1.65	0.00-0.06	0.00-0.02	0.0-2.9	0.0-0.5	.43	.43	
	36-62	15-45	1.40-1.60	0.06-0.60	0.00-0.02	0.0-2.9	0.0-0.5	.37	.37	

Table 15.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Kf	T
	In	Pct	g/cc	In/hr	In/in	Pct	Pct			
La:										
Lawrence--------	0-7	12-27	1.20-1.40	0.60-2.00	0.19-0.23	0.0-2.9	1.0-4.0	.43	.43	3
	7-24	18-35	1.40-1.60	0.60-2.00	0.18-0.22	0.0-2.9	0.2-0.8	.37	.37	
	24-45	18-35	1.50-1.70	0.00-0.06	0.00-0.02	0.0-2.9	0.0-0.5	.43	.43	
	45-65	18-60	1.50-1.70	0.06-0.20	0.00-0.02	0.0-2.9	0.0-0.5	.37	.37	
Le:										
Lawrence--------	0-7	12-27	1.20-1.40	0.60-2.00	0.19-0.23	0.0-2.9	1.0-4.0	.43	.43	3
	7-24	18-35	1.40-1.60	0.60-2.00	0.18-0.22	0.0-2.9	0.2-0.8	.37	.37	
	24-45	18-35	1.50-1.70	0.00-0.06	0.00-0.02	0.0-2.9	0.0-0.5	.43	.43	
	45-65	18-60	1.50-1.70	0.06-0.20	0.00-0.02	0.0-2.9	0.0-0.5	.37	.37	
Robertsville----	0-6	12-27	1.30-1.50	0.60-2.00	0.19-0.23	0.0-2.9	1.0-3.0	.43	.43	3
	6-18	15-35	1.40-1.60	0.60-2.00	0.18-0.22	0.0-2.9	0.2-0.8	.43	.43	
	18-36	18-35	1.50-1.65	0.00-0.06	0.00-0.02	0.0-2.9	0.0-0.5	.43	.43	
	36-62	15-45	1.40-1.60	0.06-0.60	0.00-0.02	0.0-2.9	0.0-0.5	.37	.37	
LgC2:										
Lenberg---------	0-5	28-40	1.30-1.50	0.60-2.00	0.18-0.23	0.0-2.9	0.5-3.0	.43	.43	3
	5-14	35-60	1.40-1.60	0.20-0.60	0.10-0.19	3.0-5.9	0.5-1.0	.28	.28	
	14-30	40-60	1.40-1.65	0.20-0.60	0.10-0.18	3.0-5.9	0.2-0.8	.28	.28	
	30-39	40-60	1.40-1.65	0.20-0.60	0.10-0.16	3.0-5.9	0.0-0.5	.28	.37	
	39-55	---	---	0.00-0.20	---	---	---	---	---	
LlB:										
Lily------------	0-6	7-27	1.20-1.40	0.60-6.00	0.13-0.18	0.0-2.9	0.5-4.0	.28	.28	2
	6-39	18-35	1.25-1.35	2.00-6.00	0.12-0.18	0.0-2.9	0.0-0.5	.28	.28	
	39-43	---	---	0.00-0.06	---	---	---	---	---	
LlC:										
Lily------------	0-6	7-27	1.20-1.40	0.60-6.00	0.13-0.18	0.0-2.9	0.5-4.0	.28	.37	2
	6-39	18-35	1.25-1.35	2.00-6.00	0.12-0.18	0.0-2.9	0.0-0.5	.28	.28	
	39-43	---	---	0.00-0.06	---	---	---	---	---	
LoB:										
Lowell----------	0-8	12-27	1.20-1.40	0.60-2.00	0.18-0.23	0.0-2.9	1.0-4.0	.37	.37	3
	8-42	35-60	1.30-1.60	0.20-2.00	0.13-0.19	3.0-5.9	0.0-0.8	.28	.28	
	42-52	40-60	1.50-1.60	0.20-0.60	0.12-0.17	3.0-5.9	0.0-0.5	.28	.28	
	52-56	---	---	0.00-0.06	---	---	---	---	---	
LoC2:										
Lowell----------	0-6	12-27	1.20-1.40	0.60-2.00	0.18-0.23	0.0-2.9	1.0-4.0	.37	.37	3
	6-42	35-60	1.30-1.60	0.20-2.00	0.13-0.19	3.0-5.9	0.0-0.8	.28	.28	
	42-52	40-60	1.50-1.60	0.20-0.60	0.12-0.17	3.0-5.9	0.0-0.5	.28	.28	
	52-56	---	---	0.00-0.06	---	---	---	---	---	
LpD2:										
Lowell----------	0-6	12-27	1.20-1.40	0.60-2.00	0.18-0.23	0.0-2.9	1.0-4.0	.37	.37	3
	6-42	35-60	1.30-1.60	0.20-2.00	0.13-0.19	3.0-5.9	0.0-0.8	.28	.28	
	42-52	40-60	1.50-1.60	0.20-0.60	0.12-0.17	3.0-5.9	0.0-0.5	.28	.28	
	52-56	---	---	0.00-0.06	---	---	---	---	---	
Faywood---------	0-6	27-40	1.30-1.40	0.60-2.00	0.18-0.22	0.0-2.9	1.0-4.0	.37	.37	3
	6-30	35-60	1.35-1.45	0.06-0.60	0.12-0.17	3.0-5.9	0.0-0.5	.28	.28	
	30-34	---	---	0.00-0.06	---	---	---	---	---	

Table 15.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T
	In	Pct	g/cc	In/hr	In/in	Pct	Pct			
LsB:										
Lowell----------	0-8	12-27	1.20-1.40	0.60-2.00	0.18-0.23	0.0-2.9	1.0-4.0	.37	.37	3
	8-42	35-60	1.30-1.60	0.20-2.00	0.13-0.19	3.0-5.9	0.0-0.8	.28	.28	
	42-52	40-60	1.50-1.60	0.20-0.60	0.12-0.17	3.0-5.9	0.0-0.5	.28	.28	
	52-56	---	---	0.00-0.06	---	---	---	---	---	
LsC2:										
Lowell----------	0-6	12-27	1.20-1.40	0.60-2.00	0.18-0.23	0.0-2.9	1.0-4.0	.37	.37	3
	6-42	35-60	1.30-1.60	0.20-2.00	0.13-0.19	3.0-5.9	0.0-0.8	.28	.28	
	42-52	40-60	1.50-1.60	0.20-0.60	0.12-0.17	3.0-5.9	0.0-0.5	.28	.28	
	52-56	---	---	0.00-0.06	---	---	---	---	---	
LtD2:										
Lowell----------	0-6	12-27	1.20-1.40	0.60-2.00	0.18-0.23	0.0-2.9	1.0-4.0	.37	.37	3
	6-42	35-60	1.30-1.60	0.20-2.00	0.13-0.19	3.0-5.9	0.0-0.8	.28	.28	
	42-52	40-60	1.50-1.60	0.20-0.60	0.12-0.17	3.0-5.9	0.0-0.5	.28	.28	
	52-56	---	---	0.00-0.06	---	---	---	---	---	
Faywood---------	0-6	27-40	1.30-1.40	0.60-2.00	0.18-0.22	0.0-2.9	1.0-4.0	.37	.37	3
	6-30	35-60	1.35-1.45	0.06-0.60	0.12-0.17	3.0-5.9	0.0-0.5	.28	.28	
	30-34	---	---	0.00-0.06	---	---	---	---	---	
Me:										
Melvin----------	0-8	12-20	1.20-1.60	0.60-2.00	0.18-0.23	0.0-2.9	0.5-3.0	.43	.43	5
	8-22	12-35	1.30-1.60	0.60-2.00	0.18-0.23	0.0-2.9	0.5-1.0	.43	.43	
	22-65	7-40	1.40-1.70	0.60-2.00	0.16-0.23	0.0-2.9	0.2-0.8	.43	.43	
MoB:										
Monongahela-----	0-9	10-27	1.20-1.40	0.60-2.00	0.18-0.24	0.0-2.9	2.0-4.0	.43	.43	3
	9-18	18-35	1.30-1.50	0.60-2.00	0.14-0.18	0.0-2.9	0.0-0.5	.43	.43	
	18-50	18-35	1.30-1.60	0.00-0.06	0.00-0.02	0.0-2.9	0.0-0.5	.43	.43	
	50-65	10-35	1.20-1.40	0.20-0.60	0.00-0.02	0.0-2.9	0.0-0.5	.43	.43	
Ne:										
Newark----------	0-8	7-27	1.20-1.40	0.60-2.00	0.15-0.23	0.0-2.9	1.0-4.0	.43	.43	5
	8-16	18-35	1.20-1.45	0.60-2.00	0.18-0.23	0.0-2.9	0.2-0.5	.43	.43	
	16-62	12-40	1.30-1.50	0.60-2.00	0.15-0.22	0.0-2.9	0.0-0.5	.43	.43	
NhB:										
Nicholson-------	0-8	12-27	1.20-1.40	0.60-2.00	0.19-0.23	0.0-2.9	2.0-4.0	.43	.43	3
	8-24	18-35	1.40-1.60	0.60-2.00	0.18-0.22	0.0-2.9	0.5-0.8	.43	.43	
	24-44	18-35	1.50-1.70	0.00-0.06	0.00-0.02	0.0-2.9	0.2-0.5	.43	.43	
	44-65	35-60	1.40-1.60	0.06-0.60	0.00-0.02	3.0-5.9	0.0-0.5	.28	.28	
	65-69	---	---	---	---	---	---	---	---	
NhC2:										
Nicholson-------	0-6	12-27	1.20-1.40	0.60-2.00	0.19-0.23	0.0-2.9	2.0-4.0	.43	.43	3
	6-24	18-35	1.40-1.60	0.60-2.00	0.18-0.22	0.0-2.9	0.5-0.8	.43	.43	
	24-44	18-35	1.50-1.70	0.00-0.06	0.00-0.02	0.0-2.9	0.2-0.5	.43	.43	
	44-65	35-60	1.40-1.60	0.06-0.60	0.00-0.02	3.0-5.9	0.0-0.5	.28	.28	
	65-69	---	---	---	---	---	---	---	---	
No:										
Nolin-----------	0-8	12-27	1.20-1.40	0.60-2.00	0.18-0.23	0.0-2.9	2.0-4.0	.43	.43	5
	8-46	18-35	1.25-1.50	0.60-2.00	0.18-0.23	0.0-2.9	0.5-2.0	.43	.43	
	46-65	10-30	1.30-1.55	0.60-2.00	0.18-0.23	0.0-2.9	0.5-1.0	.43	.43	

Table 15.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensibility	Organic matter	Erosion factors Kw	Kf	T
	In	Pct	g/cc	In/hr	In/in	Pct	Pct			
OtB, OwB:										
Otwell----------	0-7	12-25	1.25-1.40	0.60-2.00	0.22-0.24	0.0-2.9	1.0-2.0	.43	.43	3
	7-22	22-35	1.30-1.45	0.20-0.60	0.18-0.22	0.0-2.9	0.5-1.0	.43	.43	
	22-46	18-35	1.60-1.80	0.00-0.06	0.00-0.02	3.0-5.9	0.0-0.5	.43	.43	
	46-65	20-35	1.55-1.65	0.06-0.20	0.00-0.02	3.0-5.9	0.0-0.5	.43	.43	
PrB, PrC:										
Pricetown-------	0-9	10-27	1.35-1.55	0.60-2.00	0.18-0.24	0.0-2.9	1.0-4.0	.43	.43	5
	9-19	18-35	1.40-1.65	0.60-2.00	0.16-0.22	0.0-2.9	0.2-0.8	.43	.43	
	19-42	18-35	1.40-1.65	0.60-2.00	0.16-0.22	0.0-2.9	0.0-0.5	.43	.43	
	42-65	30-60	1.40-1.70	0.20-0.57	0.10-0.18	3.0-5.9	0.0-0.5	.28	.28	
Rb:										
Robertsville----	0-6	12-27	1.30-1.50	0.60-2.00	0.19-0.23	0.0-2.9	1.0-3.0	.43	.43	3
	6-18	15-35	1.40-1.60	0.60-2.00	0.18-0.22	0.0-2.9	0.2-0.8	.43	.43	
	18-36	18-35	1.50-1.65	0.00-0.06	0.00-0.02	0.0-2.9	0.0-0.5	.43	.43	
	36-62	15-45	1.40-1.60	0.06-0.60	0.00-0.02	0.0-2.9	0.0-0.5	.37	.37	
RoF:										
Rock outcrop.										
Fairmount-------	0-9	27-40	1.20-1.40	0.06-0.20	0.12-0.20	3.0-5.9	3.0-7.0	.37	.37	2
	9-18	35-60	1.40-1.60	0.06-0.20	0.10-0.18	3.0-5.9	1.0-3.0	.28	.37	
	18-22	---	---	0.00-0.06	---	---	---	---	---	
SaB, SaC, SdB, SdC:										
Sandview-------	0-10	10-27	1.30-1.40	0.60-2.00	0.18-0.23	0.0-2.9	1.0-4.0	.37	.37	5
	10-38	18-40	1.30-1.45	0.20-0.60	0.18-0.23	0.0-2.9	0.5-1.5	.32	.32	
	38-74	40-65	1.35-1.60	0.06-0.60	0.12-0.18	3.0-5.9	0.5-1.5	.28	.28	
SeC2:										
Shrouts---------	0-4	27-50	1.40-1.55	0.06-0.20	0.15-0.20	0.0-2.9	0.5-3.0	.43	.43	2
	4-26	40-65	1.40-1.65	0.06-0.20	0.13-0.17	3.0-5.9	0.0-0.5	.28	.28	
	26-35	---	---	0.00-0.60	---	---	---	---	---	
SfD3:										
Shrouts---------	0-4	27-50	1.40-1.55	0.06-0.20	0.15-0.20	0.0-2.9	0.5-3.0	.32	.32	2
	4-26	40-65	1.40-1.65	0.06-0.20	0.13-0.17	3.0-5.9	0.0-0.5	.28	.28	
	26-35	---	---	0.00-0.60	---	---	---	---	---	
Cynthiana-------	0-4	27-40	1.20-1.40	0.60-2.00	0.15-0.20	3.0-5.9	1.0-4.0	.37	.37	2
	4-16	40-60	1.35-1.60	0.20-0.60	0.08-0.15	3.0-5.9	1.0-4.0	.28	.28	
	16-20	---	---	0.00-0.06	---	---	---	---	---	
SgF3:										
Shrouts---------	0-4	27-50	1.40-1.55	0.06-0.20	0.15-0.20	0.0-2.9	0.5-3.0	.32	.32	2
	4-26	40-65	1.40-1.65	0.06-0.20	0.13-0.17	3.0-5.9	0.0-0.5	.28	.28	
	26-35	---	---	0.00-0.60	---	---	---	---	---	
Garlin----------	0-7	7-27	1.20-1.40	0.60-2.00	0.14-0.20	0.0-2.9	0.5-3.0	.32	.32	2
	7-18	18-35	1.20-1.45	0.60-2.00	0.10-0.18	0.0-2.9	0.5-3.0	.32	.32	
	18-23	---	---	0.00-0.20	---	---	---	---	---	
	23-25	---	---	0.00-0.00	---	---	---	---	---	
Cynthiana-------	0-4	27-40	1.20-1.40	0.60-2.00	0.15-0.20	3.0-5.9	1.0-4.0	.37	.37	2
	4-16	40-60	1.35-1.60	0.20-0.60	0.08-0.15	3.0-5.9	1.0-4.0	.28	.28	
	16-20	---	---	0.00-0.06	---	---	---	---	---	

Table 15.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T
	In	Pct	g/cc	In/hr	In/in	Pct	Pct			
Sk:										
Skidmore--------	0-8	7-18	1.20-1.40	2.00-6.00	0.07-0.13	0.0-2.9	0.5-2.0	.17	.32	5
	8-32	7-18	1.30-1.60	2.00-6.00	0.04-0.10	0.0-2.9	0.1-0.5	.17	.24	
	32-65	7-18	1.30-1.60	2.00-6.00	0.04-0.10	0.0-2.9	0.1-0.5	.17	.24	
TeB:										
Teddy-----------	0-7	12-25	1.35-1.60	0.60-2.00	0.20-0.22	0.0-2.9	0.5-2.0	.43	.43	3
	7-30	18-35	1.40-1.60	0.60-2.00	0.18-0.20	0.0-2.9	0.0-0.8	.43	.43	
	30-48	18-35	1.55-1.80	0.00-0.20	0.00-0.02	0.0-2.9	0.0-0.5	.43	.43	
	48-65	27-50	1.50-1.80	0.20-0.57	0.00-0.02	3.0-5.9	0.0-0.5	.32	.32	
TlB, TlC:										
Tilsit----------	0-6	10-25	1.20-1.55	0.60-2.00	0.16-0.22	0.0-2.9	1.0-3.0	.43	.43	3
	6-20	18-35	1.30-1.55	0.60-2.00	0.16-0.22	0.0-2.9	0.0-0.8	.43	.43	
	20-36	18-35	1.40-1.65	0.00-0.06	0.00-0.02	0.0-2.9	0.0-0.8	.43	.43	
	36-42	10-50	1.40-1.60	0.06-0.20	0.00-0.02	0.0-2.9	0.0-0.8	.43	.43	
	42-46	---	---	0.00-0.20	---	---	---	---	---	
	46-50	---	---	0.00-0.06	---	---	---	---	---	
TpB:										
Trappist--------	0-6	7-27	1.20-1.40	0.60-2.00	0.15-0.23	0.0-2.9	0.5-2.0	.37	.37	3
	6-26	30-60	1.40-1.65	0.20-0.60	0.08-0.18	3.0-5.9	0.5-2.0	.28	.28	
	26-38	35-60	1.40-1.60	0.06-0.20	0.05-0.12	3.0-5.9	0.5-2.0	.24	.28	
	38-40	---	---	0.00-0.20	---	---	---	---	---	
TpC2:										
Trappist--------	0-7	27-40	1.20-1.40	0.60-2.00	0.15-0.23	0.0-2.9	0.5-2.0	.32	.32	2
	7-26	30-60	1.40-1.65	0.20-0.60	0.08-0.18	3.0-5.9	0.5-2.0	.28	.28	
	26-35	35-60	1.40-1.60	0.06-0.20	0.05-0.12	3.0-5.9	0.5-2.0	.24	.28	
	35-39	---	---	0.00-0.20	---	---	---	---	---	
TrD2:										
Trappist--------	0-7	27-40	1.20-1.40	0.60-2.00	0.15-0.23	0.0-2.9	0.5-2.0	.32	.32	2
	7-26	30-60	1.40-1.65	0.20-0.60	0.08-0.18	3.0-5.9	0.5-2.0	.28	.28	
	26-35	35-60	1.40-1.60	0.06-0.20	0.05-0.12	3.0-5.9	0.5-2.0	.24	.28	
	35-39	---	---	0.00-0.20	---	---	---	---	---	
Colyer----------	0-9	27-40	1.20-1.50	0.60-2.00	0.15-0.21	0.0-2.9	1.0-4.0	.37	.37	2
	9-14	35-59	1.30-1.60	0.06-0.20	0.03-0.10	0.0-2.9	1.0-4.0	.17	.28	
	14-18	---	---	0.00-0.20	---	---	---	---	---	
W.										
Water										
Yo:										
Yosemite--------	0-6	18-27	1.20-1.40	2.00-6.00	0.10-0.18	0.0-2.9	1.0-4.0	.20	.32	5
	6-21	18-27	1.20-1.40	2.00-6.00	0.07-0.13	0.0-2.9	0.0-0.5	.17	.32	
	21-65	18-35	1.20-1.40	2.00-6.00	0.04-0.10	0.0-2.9	0.0-0.2	.15	.24	

Table 16.—Chemical Properties of the Soils

(Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction
	In	meq/100g	pH
AlB:			
Allegheny	0-7	5.0-15	3.6-5.5
	7-17	5.0-10	3.6-5.5
	17-80	5.0-10	3.6-5.5
AlC2:			
Allegheny	0-5	5.0-15	3.6-5.5
	5-17	5.0-10	3.6-5.5
	17-80	5.0-10	3.6-5.5
BaB:			
Beasley	0-8	10-20	4.5-7.3
	8-16	10-20	4.5-7.3
	16-45	10-15	6.6-8.4
	45-50	---	---
BbC2:			
Beasley	0-8	10-20	4.5-7.3
	8-16	10-15	4.5-7.3
	16-45	10-15	6.6-8.4
	45-50	---	---
BeB:			
Berea	0-8	8.0-15	3.6-5.5
	8-26	5.0-10	3.6-5.5
	26-30	---	---
	30-32	---	---
Bo:			
Boonesboro	0-7	5.0-15	6.1-8.4
	7-37	5.0-15	6.1-8.4
	37-41	---	---
CaE2:			
Caneyville	0-3	10-20	4.5-7.3
	3-36	10-20	4.5-7.3
	36-40	---	---
CeB, CeC:			
Carpenter	0-12	10-20	4.5-6.5
	12-42	5.0-15	4.5-6.5
	42-52	5.0-15	4.5-6.5
	52-65	---	---
CgE2:			
Carpenter	0-12	10-20	4.5-6.5
	12-42	5.0-15	4.5-6.5
	42-52	5.0-15	4.5-6.5
	52-65	---	---
Lenberg	0-5	5.0-20	4.0-7.3
	5-14	5.0-20	4.5-5.5
	14-30	5.0-20	4.5-5.5
	30-39	5.0-20	4.5-5.5
	39-55	---	---

Table 16.—Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction
	In	meq/100g	pH
ChB, ChC:			
Chenault	0-7	5.0-20	5.1-7.3
	7-48	5.0-15	5.1-6.5
	48-58	5.0-15	5.6-7.3
	58-60	---	---
CkC:			
Chenault	0-7	5.0-20	5.1-7.3
	7-48	5.0-15	5.1-6.5
	48-58	5.0-15	5.6-7.3
	58-60	---	---
Lowell	0-6	5.0-15	4.5-6.5
	6-42	15-30	4.5-6.5
	42-52	16-40	5.1-7.8
	52-56	---	---
ClD2:			
Chenault	0-5	5.0-20	5.1-7.3
	5-48	5.0-15	5.1-6.5
	48-58	5.0-15	5.6-7.3
	58-60	---	---
Faywood	0-6	10-20	5.1-7.8
	6-30	5.0-15	5.1-7.8
	30-34	---	---
CmB:			
Christian	0-8	5.0-15	3.6-5.5
	8-18	5.0-15	3.6-5.5
	18-48	5.0-15	3.6-5.5
	48-90	5.0-15	3.6-5.5
CmC2:			
Christian	0-5	5.0-15	3.6-5.5
	5-18	5.0-15	3.6-5.5
	18-48	5.0-15	3.6-5.5
	48-90	5.0-15	3.6-5.5
CoD2:			
Christian	0-6	5.0-15	3.6-5.5
	6-18	5.0-15	3.6-5.5
	18-48	5.0-15	3.6-5.5
	48-90	5.0-15	3.6-5.5
CpF2:			
Colyer	0-9	10-30	3.6-6.0
	9-14	10-30	3.6-5.0
	14-18	---	---
Trappist	0-7	10-20	3.6-5.5
	7-26	10-20	3.6-5.5
	26-35	10-20	3.6-5.5
	35-39	---	---
CrB, CrC:			
Crider	0-8	5.0-20	5.1-7.3
	8-32	5.0-15	5.1-7.3
	32-64	5.0-15	4.5-6.5

Table 16.—Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction
	In	meq/100g	pH
CuB:			
Culleoka	0-12	10-20	5.1-6.0
	12-32	5.0-15	5.1-6.0
	32-38	5.0-15	5.1-6.5
	38-44	---	---
CuC2, CuD2:			
Culleoka	0-7	10-20	5.1-6.0
	7-32	5.0-15	5.1-6.0
	32-38	5.0-15	5.1-6.5
	38-44	---	---
CyF2:			
Cynthiana	0-6	10-30	6.1-7.8
	6-16	5.0-30	6.1-7.8
	16-20	---	---
Faywood	0-6	10-20	5.1-7.8
	6-30	5.0-15	5.1-7.8
	30-34	---	---
DAM. Dam			
DoB:			
Donerail	0-14	5.0-20	6.1-7.3
	14-45	5.0-20	5.1-6.5
	45-65	5.0-20	4.5-6.0
EdD2:			
Eden	0-5	10-20	4.5-8.4
	5-24	10-20	5.1-8.4
	24-34	---	---
EfF2:			
Eden	0-5	10-20	4.5-8.4
	5-24	10-20	5.1-8.4
	24-34	---	---
Culleoka	0-4	10-20	5.1-6.0
	4-21	5.0-15	5.1-6.0
	21-23	---	---
EkB, EkC, EmB:			
Elk	0-8	5.0-15	4.5-6.5
	8-44	5.0-20	4.5-6.5
	44-65	5.0-25	4.5-6.5
FaC2:			
Fairmount	0-9	15-40	6.6-8.4
	9-18	15-40	6.6-8.4
	18-22	---	---
FdF2:			
Fairmount	0-9	15-40	6.6-8.4
	9-18	15-40	6.6-8.4
	18-22	---	---
Faywood	0-6	10-20	5.1-7.8
	6-30	5.0-15	5.1-7.8
	30-34	---	---
Rock outcrop.			

Table 16.—Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction
	In	meq/100g	pH
FeC2, FeD2:			
Faywood	0-6	10-20	5.1-7.8
	6-30	5.0-15	5.1-7.8
	30-34	---	---
Cynthiana	0-6	10-30	6.1-7.8
	6-16	5.0-30	6.1-7.8
	16-20	---	---
FfC2, FfD2:			
Faywood	0-6	10-20	5.1-7.8
	6-30	5.0-15	5.1-7.8
	30-34	---	---
Fairmount	0-9	15-40	6.6-8.4
	9-18	15-40	6.6-8.4
	18-22	---	---
FoD2, FoF2:			
Faywood	0-6	10-20	5.1-7.8
	6-30	5.0-15	5.1-7.8
	30-34	---	---
Shrouts	0-4	10-20	5.1-8.4
	4-26	10-20	5.1-8.4
	26-35	---	---
FrB, FrC:			
Frankstown	0-8	5.0-15	5.1-6.0
	8-16	5.0-15	4.5-6.0
	16-44	5.0-15	4.5-6.0
	44-46	---	---
FrD2:			
Frankstown	0-5	5.0-15	5.1-6.0
	5-25	5.0-15	4.5-6.0
	25-45	5.0-15	4.5-6.0
	45-47	---	---
GaC2, GaD2:			
Garlin	0-7	20-30	7.4-8.4
	7-18	5.0-20	7.4-8.4
	18-23	---	---
	23-25	---	---
Shrouts	0-4	10-20	5.1-8.4
	4-26	10-20	5.1-8.4
	26-35	---	---
GmF:			
Garmon	0-3	5.0-15	4.5-7.3
	3-26	5.0-15	4.5-7.3
	26-30	---	---
GnB:			
Gilpin	0-5	10-25	3.6-5.5
	5-14	5.0-15	3.6-5.5
	14-32	5.0-15	3.6-5.5
	32-36	---	---

Table 16.—Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction
	In	meq/100g	pH
GnC2:			
Gilpin	0-4	10-25	3.6-5.5
	4-14	5.0-15	3.6-5.5
	14-32	5.0-15	3.6-5.5
	32-36	---	---
GrB:			
Greenbriar	0-10	10-15	3.6-5.5
	10-26	5.0-15	3.6-5.5
	26-48	5.0-15	3.6-5.5
	48-52	---	---
HgC:			
Hagerstown	0-7	5.0-20	4.5-6.5
	7-12	10-20	4.5-7.3
	12-40	10-20	5.1-7.3
	40-65	10-20	5.1-7.3
JeB, JeC:			
Jessietown	0-8	5.0-15	3.6-5.5
	8-16	5.0-15	3.6-5.5
	16-22	5.0-15	3.6-5.5
	22-26	---	---
Jm:			
Johnsburg	0-11	5.0-20	4.5-6.5
	11-24	5.0-20	3.6-5.5
	24-48	5.0-20	3.6-5.5
	48-52	---	---
Mullins	0-6	5.0-15	3.6-5.5
	6-18	2.0-10	3.6-5.5
	18-38	2.0-10	3.6-5.5
	38-55	2.0-10	3.6-5.5
	55-59	---	---
Jr:			
Johnsburg	0-11	5.0-20	4.5-6.5
	11-24	5.0-20	3.6-5.5
	24-48	5.0-20	3.6-5.5
	48-52	---	---
Robertsville	0-6	5.0-15	3.6-5.5
	6-18	5.0-15	3.6-5.5
	18-36	5.0-15	3.6-5.5
	36-62	5.0-15	4.5-7.3
La:			
Lawrence	0-7	5.0-15	4.5-6.5
	7-24	5.0-15	4.5-6.5
	24-45	5.0-15	4.5-5.5
	45-65	5.0-15	4.5-7.3
Le:			
Lawrence	0-7	5.0-15	4.5-6.5
	7-24	5.0-15	4.5-6.5
	24-45	5.0-15	4.5-5.5
	45-65	5.0-15	4.5-7.3

Table 16.—Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction
	In	meq/100g	pH
Le:			
Robertsville	0-6	5.0-15	3.6-5.5
	6-18	5.0-15	3.6-5.5
	18-36	5.0-15	3.6-5.5
	36-62	5.0-15	4.5-7.3
LgC2:			
Lenberg	0-5	10-20	4.5-7.3
	5-14	10-20	4.5-5.5
	14-30	10-20	4.5-5.5
	30-39	10-20	4.5-5.5
	39-55	---	---
LlB, LlC:			
Lily	0-6	5.0-15	3.6-5.5
	6-39	5.0-10	3.6-5.5
	39-43	---	---
LoB:			
Lowell	0-8	5.0-15	4.5-6.5
	8-42	15-30	4.5-6.5
	42-52	16-40	5.1-7.8
	52-56	---	---
LoC2:			
Lowell	0-6	5.0-15	4.5-6.5
	6-42	15-30	4.5-6.5
	42-52	16-40	5.1-7.8
	52-56	---	---
LpD2:			
Lowell	0-6	5.0-15	4.5-6.5
	6-42	15-30	4.5-6.5
	42-52	16-40	5.1-7.8
	52-56	---	---
Faywood	0-6	10-20	5.1-7.8
	6-30	5.0-15	5.1-7.8
	30-34	---	---
LsB:			
Lowell	0-8	5.0-15	4.5-6.5
	8-42	15-30	4.5-6.5
	42-52	16-40	5.1-7.8
	52-56	---	---
LsC2:			
Lowell	0-6	5.0-15	4.5-6.5
	6-42	15-30	4.5-6.5
	42-52	16-40	5.1-7.8
	52-56	---	---
LtD2:			
Lowell	0-6	5.0-15	4.5-6.5
	6-42	15-30	4.5-6.5
	42-52	16-40	5.1-7.8
	52-56	---	---
Faywood	0-6	10-20	5.1-7.8
	6-30	5.0-15	5.1-7.8
	30-34	---	---

Table 16.—Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction
	In	meq/100g	pH
Me:			
Melvin	0-8	5.0-15	5.6-7.8
	8-22	5.0-15	5.6-7.8
	22-65	5.0-15	5.6-7.8
MoB:			
Monongahela	0-9	10-20	4.5-5.5
	9-18	5.0-15	4.5-5.5
	18-50	5.0-15	4.5-5.5
	50-65	5.0-15	4.5-5.5
Ne:			
Newark	0-8	5.0-15	5.6-7.8
	8-16	5.0-15	5.6-7.8
	16-62	5.0-15	5.6-7.8
NhB:			
Nicholson	0-8	10-15	4.5-6.5
	8-24	5.0-20	4.5-6.5
	24-44	5.0-20	4.5-6.5
	44-65	5.0-20	5.1-7.8
	65-69	---	---
NhC2:			
Nicholson	0-6	10-15	4.5-6.5
	6-24	5.0-20	4.5-6.5
	24-44	5.0-20	4.5-6.5
	44-65	5.0-20	5.1-7.8
	65-69	---	---
No:			
Nolin	0-8	10-20	5.6-8.4
	8-46	5.0-20	5.6-8.4
	46-65	5.0-20	5.1-8.4
OtB, OwB:			
Otwell	0-7	5.0-15	4.5-7.3
	7-22	5.0-10	4.5-5.5
	22-46	5.0-10	4.5-5.5
	46-65	5.0-15	5.1-6.5
PrB, PrC:			
Pricetown	0-9	5.0-15	4.5-6.0
	9-19	5.0-15	4.5-6.0
	19-42	5.0-15	4.5-6.0
	42-65	5.0-20	4.5-5.5
Rb:			
Robertsville	0-6	5.0-15	3.6-5.5
	6-18	5.0-15	3.6-5.5
	18-36	5.0-15	3.6-5.5
	36-62	5.0-15	4.5-7.3
RoF:			
Rock outcrop.			
Fairmount	0-9	15-40	6.6-8.4
	9-18	15-40	6.6-8.4
	18-22	---	---

Table 16.—Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction
	In	meq/100g	pH
SaB, SaC:			
Sandview	0-10	10-20	4.5-6.0
	10-38	10-30	4.5-7.3
	38-74	10-30	5.1-7.8
SdB, SdC:			
Sandview	0-10	10-20	4.5-6.0
	10-38	10-30	4.5-7.3
	38-74	10-30	5.1-7.8
SeC2:			
Shrouts	0-4	10-20	5.1-8.4
	4-26	10-20	5.1-8.4
	26-35	---	---
SfD3:			
Shrouts	0-4	10-20	5.1-8.4
	4-26	10-20	5.1-8.4
	26-35	---	---
Cynthiana	0-4	10-30	6.1-7.8
	4-16	5.0-30	6.1-7.8
	16-20	---	---
SgF3:			
Shrouts	0-4	10-20	5.1-8.4
	4-26	10-20	5.1-8.4
	26-35	---	---
Garlin	0-7	20-30	7.4-8.4
	7-18	5.0-20	7.4-8.4
	18-23	---	---
	23-25	---	---
Cynthiana	0-4	10-30	6.1-7.8
	4-16	5.0-30	6.1-7.8
	16-20	---	---
Sk:			
Skidmore	0-8	10-20	5.6-7.8
	8-32	10-20	5.6-7.8
	32-65	10-20	5.6-7.8
TeB:			
Teddy	0-7	5.0-10	4.5-6.5
	7-30	5.0-10	4.5-6.5
	30-48	5.0-15	4.5-5.5
	48-65	5.0-15	4.5-5.5
TlB, TlC:			
Tilsit	0-6	5.0-10	3.6-5.5
	6-20	5.0-10	3.6-5.5
	20-36	5.0-10	3.6-5.5
	36-42	5.0-10	3.6-5.5
	42-46	---	---
	46-50	---	---
TpB:			
Trappist	0-6	10-20	3.6-5.5
	6-26	10-20	3.6-5.5
	26-38	10-20	3.6-5.5
	38-40	---	---

Table 16.—Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction
	In	meq/100g	pH
TpC2:			
Trappist	0-7	10-20	3.6-5.5
	7-26	10-20	3.6-5.5
	26-35	10-20	3.6-5.5
	35-39	---	---
TrD2:			
Trappist	0-7	10-20	3.6-5.5
	7-26	10-20	3.6-5.5
	26-35	10-20	3.6-5.5
	35-39	---	---
Colyer	0-9	10-30	3.6-6.0
	9-14	10-30	3.6-5.0
	14-18	---	---
W.			
Water			
Yo:			
Yosemite	0-6	5.0-15	5.6-7.8
	6-21	5.0-12	5.6-7.8
	21-65	5.0-15	5.6-7.8

Table 17.—Soil Features

(See text for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Map symbol and soil name	Restrictive layer			Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Hardness		Uncoated steel	Concrete
		In				
AlB, AlC2:						
Allegheny	---	---	---	None	Low	High
BaB, BbC2:						
Beasley	Bedrock (paralithic)	40-60	Strongly cemented	None	Moderate	Moderate
BeB:						
Berea	Bedrock (paralithic)	20-30	Strongly cemented	None	Moderate	High
	Bedrock (lithic)	20-40	Very strongly cemented			
Bo:						
Boonesboro	Bedrock (lithic)	20-40	Indurated	None	Low	Low
CaE2:						
Caneyville	Bedrock (lithic)	20-40	Indurated	None	High	Moderate
CeB, CeC:						
Carpenter	Bedrock (paralithic)	40-60	Strongly cemented	None	Low	Moderate
CgE2:						
Carpenter	Bedrock (paralithic)	40-60	Strongly cemented	None	Low	Moderate
Lenberg	Bedrock (paralithic)	20-40	Strongly cemented	None	Moderate	Moderate
ChB, ChC:						
Chenault	Bedrock (lithic)	40-60	Indurated	None	Low	Moderate
CkC:						
Chenault	Bedrock (lithic)	40-60	Indurated	None	Low	Moderate
Lowell	Bedrock (lithic)	40-60	Indurated	None	High	Moderate
ClD2:						
Chenault	Bedrock (lithic)	40-60	Indurated	None	Low	Moderate
Faywood	Bedrock (lithic)	20-40	Indurated	None	High	Moderate
CmB, CmC2, CoD2:						
Christian	---	---	---	None	High	High
CpF2:						
Colyer	Bedrock (lithic)	8-20	Indurated	None	High	High
Trappist	Bedrock (lithic)	20-40	Indurated	None	High	High
CrB, CrC:						
Crider	---	---	---	None	Moderate	Moderate
CuB, CuC2, CuD2:						
Culleoka	Bedrock (lithic)	20-40	Indurated	None	Low	Moderate

Table 17.—Soil Features—Continued

Map symbol and soil name	Restrictive layer			Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Hardness		Uncoated steel	Concrete
		In				
CyF2:						
Cynthiana	Bedrock (lithic)	10-20	Indurated	None	Moderate	Low
Faywood	Bedrock (lithic)	20-40	Indurated	None	High	Moderate
DAM. Dam						
DoB:						
Donerail	---	---	---	None	Moderate	Moderate
EdD2:						
Eden	Bedrock (paralithic)	20-40	Very strongly cemented	None	Moderate	Low
EfF2:						
Eden	Bedrock (paralithic)	20-40	Very strongly cemented	None	Moderate	Low
Culleoka	Bedrock (lithic)	20-40	Indurated	None	Low	Moderate
EkB, EkC, EmB:						
Elk	---	---	---	None	Moderate	Moderate
FaC2:						
Fairmount	Bedrock (lithic)	10-20	Indurated	None	Moderate	Low
FdF2:						
Fairmount	Bedrock (lithic)	10-20	Indurated	None	Moderate	Low
Faywood	Bedrock (lithic)	20-40	Indurated	None	High	Moderate
Rock outcrop.						
FeC2, FeD2:						
Faywood	Bedrock (lithic)	20-40	Indurated	None	High	Moderate
Cynthiana	Bedrock (lithic)	10-20	Indurated	None	Moderate	Low
FfC2, FfD2:						
Faywood	Bedrock (lithic)	20-40	Indurated	None	High	Moderate
Fairmount	Bedrock (lithic)	10-20	Indurated	None	Moderate	Low
FoD2, FoF2:						
Faywood	Bedrock (lithic)	20-40	Indurated	None	High	Moderate
Shrouts	Bedrock (paralithic)	20-40	Very strongly cemented	None	High	Low
FrB, FrC, FrD2:						
Frankstown	Bedrock (lithic)	40-72	Indurated	None	Moderate	Moderate
GaC2:						
Garlin	Bedrock (paralithic)	8-20	Very strongly cemented	None	Low	Low
	Bedrock (lithic)	20-35	Indurated			
Shrouts	Bedrock (paralithic)	20-40	Very strongly cemented	None	High	Low

Table 17.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Hardness		Uncoated steel	Concrete
		In				
GaD2:						
Garlin	Bedrock (lithic)	12-20	Indurated	None	Low	Low
Shrouts	Bedrock (paralithic)	20-40	Very strongly cemented	None	High	Low
GmF:						
Garmon	Bedrock (lithic)	20-40	Indurated	None	Low	Moderate
GnB, GnC2:						
Gilpin	Bedrock (lithic)	20-40	Indurated	None	Low	High
GrB:						
Greenbriar	Bedrock (lithic)	40-72	Indurated	None	Moderate	High
HgC:						
Hagerstown	Bedrock (lithic)	60-80	Indurated	None	Moderate	Low
JeB, JeC:						
Jessietown	Bedrock (lithic)	20-40	Indurated	None	Moderate	High
Jm:						
Johnsburg	Fragipan	24-36	Noncemented	None	High	High
	Bedrock (lithic)	48-72	Indurated			
Mullins	Fragipan	12-28	Noncemented	None	High	High
	Bedrock (lithic)	48-60	Indurated			
Jr:						
Johnsburg	Fragipan	24-36	Noncemented	None	High	High
	Bedrock (lithic)	48-72	Indurated			
Robertsville	Fragipan	15-36	Noncemented	None	High	High
La:						
Lawrence	Fragipan	18-32	Noncemented	None	High	High
Le:						
Lawrence	Fragipan	18-32	Noncemented	None	High	High
Robertsville	Fragipan	15-36	Noncemented	None	High	High
LgC2:						
Lenberg	Bedrock (paralithic)	20-40	Strongly cemented	None	Moderate	Moderate
LlB, LlC:						
Lily	Bedrock (lithic)	20-40	Indurated	None	Moderate	High
LoB, LoC2:						
Lowell	Bedrock (lithic)	40-60	Indurated	None	High	Moderate
LpD2:						
Lowell	Bedrock (lithic)	40-60	Indurated	None	High	Moderate
Faywood	Bedrock (lithic)	20-40	Indurated	None	High	Moderate
LsB, LsC2:						
Lowell	Bedrock (lithic)	40-60	Indurated	None	High	Moderate

Table 17.—Soil Features—Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Restrictive layer: Hardness	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In				
LtD2:						
Lowell	Bedrock (lithic)	40-60	Indurated	None	High	Moderate
Faywood	Bedrock (lithic)	20-40	Indurated	None	High	Moderate
Me:						
Melvin	---	---	---	None	High	Low
MoB:						
Monongahela	Fragipan	18-30	Noncemented	None	High	High
Ne:						
Newark	---	---	---	None	High	Low
NhB, NhC2:						
Nicholson	Fragipan	18-30	Noncemented	None	High	Moderate
No:						
Nolin	---	---	---	None	Low	Moderate
OtB, OwB:						
Otwell	Fragipan	18-30	Noncemented	None	Moderate	High
PrB, PrC:						
Pricetown	---	---	---	None	Moderate	Moderate
Rb:						
Robertsville	Fragipan	---	Noncemented	None	High	High
RoF:						
Rock outcrop.						
Fairmount	Bedrock (lithic)	10-20	Indurated	None	Moderate	Low
SaB, SaC, SdB, SdC:						
Sandview	---	---	---	None	Moderate	Moderate
SeC2:						
Shrouts	Bedrock (paralithic)	20-40	Very strongly cemented	None	High	Low
SfD3:						
Shrouts	Bedrock (paralithic)	20-40	Very strongly cemented	None	High	Low
Cynthiana	Bedrock (lithic)	10-20	Indurated	None	Moderate	Low
SgF3:						
Shrouts	Bedrock (paralithic)	20-40	Indurated	None	High	Low
Garlin	Bedrock (lithic)	12-20	Indurated	None	Low	Low
Cynthiana	Bedrock (lithic)	10-20	Indurated	None	Moderate	Low
Sk:						
Skidmore	Bedrock (lithic)	40-90	Indurated	None	Low	Moderate
TeB:						
Teddy	Fragipan	18-36	Noncemented	None	Moderate	High

Table 17.—Soil Features—Continued

Map symbol and soil name	Restrictive layer			Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Hardness		Uncoated steel	Concrete
		In				
TlB, TlC:						
Tilsit-----------------	Fragipan	18-30	Noncemented	None	High	High
	Bedrock (paralithic)	40-50	Strongly cemented			
	Bedrock (lithic)	40-80	Indurated			
TpB, TpC2:						
Trappist---------------	Bedrock (lithic)	20-40	Indurated	None	High	High
TrD2:						
Trappist---------------	Bedrock (lithic)	20-40	Indurated	None	High	High
Colyer-----------------	Bedrock (lithic)	8-20	Indurated	None	High	High
W.						
Water						
Yo:						
Yosemite---------------	---	---	---	None	Low	Low

Table 18.—Water Features

(Depths of layers are in feet. See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
			Ft	Ft		
AlB:						
Allegheny	B					
		January	---	---	---	Rare
		February	---	---	---	Rare
		March	---	---	---	Rare
		April	---	---	---	Rare
		May	---	---	---	Rare
		December	---	---	---	Rare
AlC2:						
Allegheny	B					
		Jan-Dec	---	---	---	None
BaB, BbC2:						
Beasley	C					
		Jan-Dec	---	---	---	None
BeB:						
Berea	C					
		January	1.5-3.0	---	---	None
		February	1.5-3.0	---	---	None
		March	1.5-3.0	---	---	None
		April	1.5-3.0	---	---	None
		December	1.5-3.0	---	---	None
Bo:						
Boonesboro	B					
		January	---	---	Brief	Frequent
		February	---	---	Brief	Frequent
		March	---	---	Brief	Frequent
		April	---	---	Brief	Frequent
		December	---	---	Brief	Frequent
CaE2:						
Caneyville	C					
		Jan-Dec	---	---	---	None
CeB, CeC:						
Carpenter	B					
		Jan-Dec	---	---	---	None
CgE2:						
Carpenter	B					
		Jan-Dec	---	---	---	None
Lenberg	C					
		Jan-Dec	---	---	---	None
ChB, ChC:						
Chenault	B					
		Jan-Dec	---	---	---	None

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
			Ft	Ft		
CkC:						
Chenault	B	Jan-Dec	---	---	---	None
Lowell	C	Jan-Dec	---	---	---	None
ClD2:						
Chenault	B	Jan-Dec	---	---	---	None
Faywood	C	Jan-Dec	---	---	---	None
CmB, CmC2, CoD2:						
Christian	C	Jan-Dec	---	---	---	None
CpF2:						
Colyer	D	Jan-Dec	---	---	---	None
Trappist	C	Jan-Dec	---	---	---	None
CrB, CrC:						
Crider	B	Jan-Dec	---	---	---	None
CuB, CuC2, CuD2:						
Culleoka	B	Jan-Dec	---	---	---	None
CyF2:						
Cynthiana	D	Jan-Dec	---	---	---	None
Faywood	C	Jan-Dec	---	---	---	None
DAM.						
Dam						
DoB:						
Donerail	C	January	1.5-3.0	---	---	None
		February	1.5-3.0	---	---	None
		March	1.5-3.0	---	---	None
		April	1.5-3.0	---	---	None
		December	1.5-3.0	---	---	None
EdD2:						
Eden	C	Jan-Dec	---	---	---	None

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
			Ft	Ft		
EfF2:						
Eden	C					
		Jan-Dec	---	---	---	None
Culleoka	B					
		Jan-Dec	---	---	---	None
EkB, EkC:						
Elk	B					
		Jan-Dec	---	---	---	None
EmB:						
Elk	B					
		January	---	---	---	Rare
		February	---	---	---	Rare
		March	---	---	---	Rare
		April	---	---	---	Rare
		May	---	---	---	Rare
		December	---	---	---	Rare
FaC2:						
Fairmount	D					
		Jan-Dec	---	---	---	None
FdF2:						
Fairmount	D					
		Jan-Dec	---	---	---	None
Faywood	C					
		Jan-Dec	---	---	---	None
Rock outcrop.						
FeC2, FeD2:						
Faywood	C					
		Jan-Dec	---	---	---	None
Cynthiana	D					
		Jan-Dec	---	---	---	None
FfC2, FfD2:						
Faywood	C					
		Jan-Dec	---	---	---	None
Fairmount	D					
		Jan-Dec	---	---	---	None
FoD2, FoF2:						
Faywood	C					
		Jan-Dec	---	---	---	None
Shrouts	D					
		Jan-Dec	---	---	---	None
FrB, FrC, FrD2:						
Frankstown	B					
		Jan-Dec	---	---	---	None

Table 18.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
			Ft	Ft		
GaC2, GaD2:						
Garlin	B					
		Jan-Dec	---	---	---	None
Shrouts	D					
		Jan-Dec	---	---	---	None
GmF:						
Garmon	C					
		Jan-Dec	---	---	---	None
GnB, GnC2:						
Gilpin	C					
		Jan-Dec	---	---	---	None
GrB:						
Greenbriar	B					
		Jan-Dec	---	---	---	None
HgC:						
Hagerstown	B					
		Jan-Dec	---	---	---	None
JeB, JeC:						
Jessietown	B					
		Jan-Dec	---	---	---	None
Jm:						
Johnsburg	D					
		January	1.0-1.5	---	---	None
		February	1.0-1.5	---	---	None
		March	1.0-1.5	---	---	None
		April	1.0-1.5	---	---	None
		December	1.0-1.5	---	---	None
Mullins	D					
		January	0.0-1.0	---	---	None
		February	0.0-1.0	---	---	None
		March	0.0-1.0	---	---	None
		April	0.0-1.0	---	---	None
		December	0.0-1.0	---	---	None
Jr:						
Johnsburg	D					
		January	1.0-1.5	---	---	None
		February	1.0-1.5	---	---	None
		March	1.0-1.5	---	---	None
		April	1.0-1.5	---	---	None
		December	1.0-1.5	---	---	None
Robertsville	D					
		January	0.0-1.0	---	---	None
		February	0.0-1.0	---	---	None
		March	0.0-1.0	---	---	None
		April	0.0-1.0	---	---	None
		December	0.0-1.0	---	---	None

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
			Ft	Ft		
La:						
Lawrence----------------	C					
		January	1.0-1.5	---	---	Rare
		February	1.0-1.5	---	---	Rare
		March	1.0-1.5	---	---	Rare
		April	1.0-1.5	---	---	Rare
		May	---	---	---	Rare
		December	1.0-1.5	---	---	Rare
Le:						
Lawrence----------------	C					
		January	1.0-1.5	---	---	None
		February	1.0-1.5	---	---	None
		March	1.0-1.5	---	---	None
		April	1.0-1.5	---	---	None
		December	1.0-1.5	---	---	None
Robertsville------------	D					
		January	0.0-1.0	---	---	None
		February	0.0-1.0	---	---	None
		March	0.0-1.0	---	---	None
		April	0.0-1.0	---	---	None
		December	0.0-1.0	---	---	None
LgC2:						
Lenberg-----------------	C					
		Jan-Dec	---	---	---	None
LlB, LlC:						
Lily--------------------	B					
		Jan-Dec	---	---	---	None
LoB, LoC2:						
Lowell------------------	C					
		Jan-Dec	---	---	---	None
LpD2:						
Lowell------------------	C					
		Jan-Dec	---	---	---	None
Faywood-----------------	C					
		Jan-Dec	---	---	---	None
LsB, LsC2:						
Lowell------------------	C					
		Jan-Dec	---	---	---	None
LtD2:						
Lowell------------------	C					
		Jan-Dec	---	---	---	None
Faywood-----------------	C					
		Jan-Dec	---	---	---	None

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
			Ft	Ft		
Me:						
Melvin	D					
		January	0.0-1.0	>6.0	Brief	Frequent
		February	0.0-1.0	>6.0	Brief	Frequent
		March	0.0-1.0	>6.0	Brief	Frequent
		April	0.0-1.0	>6.0	Brief	Frequent
		May	0.0-1.0	>6.0	Brief	Frequent
		December	0.0-1.0	>6.0	Brief	Frequent
MoB:						
Monongahela	C					
		January	1.5-2.5	---	---	None
		February	1.5-2.5	---	---	None
		March	1.5-2.5	---	---	None
		April	1.5-2.5	---	---	None
		December	1.5-2.5	---	---	None
Ne:						
Newark	C					
		January	1.0-1.5	>6.0	Brief	Frequent
		February	1.0-1.5	>6.0	Brief	Frequent
		March	1.0-1.5	>6.0	Brief	Frequent
		April	1.0-1.5	>6.0	Brief	Frequent
		May	1.0-1.5	>6.0	Brief	Frequent
		December	1.0-1.5	>6.0	Brief	Frequent
NhB, NhC2:						
Nicholson	C					
		January	1.5-2.5	---	---	None
		February	1.5-2.5	---	---	None
		March	1.5-2.5	---	---	None
		April	1.5-2.5	---	---	None
		December	1.5-2.5	---	---	None
No:						
Nolin	B					
		January	3.3-6.0	>6.0	Brief	Frequent
		February	3.3-6.0	>6.0	Brief	Frequent
		March	3.3-6.0	>6.0	Brief	Frequent
		April	3.3-6.0	>6.0	Brief	Frequent
		May	---	---	Brief	Frequent
		December	---	---	Brief	Frequent
OtB:						
Otwell	C					
		January	1.5-2.5	---	---	None
		February	1.5-2.5	---	---	None
		March	1.5-2.5	---	---	None
		April	1.5-2.5	---	---	None
		December	1.5-2.5	---	---	None
OwB:						
Otwell	C					
		January	1.5-2.5	---	---	Rare
		February	1.5-2.5	---	---	Rare
		March	1.5-2.5	---	---	Rare
		April	1.5-2.5	---	---	Rare
		May	---	---	---	Rare
		December	1.5-2.5	---	---	Rare

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
			Ft	Ft		
PrB, PrC:						
Pricetown	B					
		Jan-Dec	---	---	---	None
Rb:						
Robertsville	D					
		January	0.0-1.0	---	---	Rare
		February	0.0-1.0	---	---	Rare
		March	0.0-1.0	---	---	Rare
		April	0.0-1.0	---	---	Rare
		May	0.0-1.0	---	---	Rare
		December	0.0-1.0	---	---	Rare
RoF:						
Rock outcrop.						
Fairmount	D					
		Jan-Dec	---	---	---	None
SaB, SaC, SdB, SdC:						
Sandview	B					
		Jan-Dec	---	---	---	None
SeC2:						
Shrouts	D					
		Jan-Dec	---	---	---	None
SfD3:						
Shrouts	D					
		Jan-Dec	---	---	---	None
Cynthiana	D					
		Jan-Dec	---	---	---	None
SgF3:						
Shrouts	D					
		Jan-Dec	---	---	---	None
Garlin	B					
		Jan-Dec	---	---	---	None
Cynthiana	D					
		Jan-Dec	---	---	---	None
Sk:						
Skidmore	B					
		January	3.0-4.0	>6.0	Very brief	Frequent
		February	3.0-4.0	>6.0	Very brief	Frequent
		March	3.0-4.0	>6.0	Very brief	Frequent
		April	3.0-4.0	>6.0	Very brief	Frequent
		May	---	---	Very brief	Frequent
		December	3.0-4.0	>6.0	Very brief	Frequent

Table 18.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
			Ft	Ft		
TeB:						
Teddy	C					
		January	1.5-3.0	---	---	None
		February	1.5-3.0	---	---	None
		March	1.5-3.0	---	---	None
		April	1.5-3.0	---	---	None
		December	1.5-3.0	---	---	None
TlB, TlC:						
Tilsit	C					
		January	1.5-2.5	---	---	None
		February	1.5-2.5	---	---	None
		March	1.5-2.5	---	---	None
		April	1.5-2.5	---	---	None
		December	1.5-2.5	---	---	None
TpB, TpC2:						
Trappist	C					
		Jan-Dec	---	---	---	None
TrD2:						
Trappist	C					
		Jan-Dec	---	---	---	None
Colyer	D					
		Jan-Dec	---	---	---	None
W.						
Water						
Yo:						
Yosemite	B					
		January	1.0-1.5	>6.0	Very brief	Frequent
		February	1.0-1.5	>6.0	Very brief	Frequent
		March	1.0-1.5	>6.0	Very brief	Frequent
		April	1.0-1.5	>6.0	Very brief	Frequent
		May	1.0-1.5	>6.0	Very brief	Frequent
		December	1.0-1.5	>6.0	Very brief	Frequent

Table 19.—Physical Analyses of Selected Soils

(A dash indicates that the material was not detected. A blank indicates that the determination was not made. T
the typical pedons for the soil series in the survey area. For the location of the pedons, see the sectic
and Their Morphology")

Soil name, report number, horizon, and depth in inches	Total			Size class and particle diameter (mm)								Coa
				Sand								
	Sand (2-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)	Very coarse (2-1)	Coarse (1-0.5)	Medium (0.5-0.25)	Fine (0.25-0.1)	Very fine (0.1-0.05)	Sand coarser than very fine (2-0.1)	Very fine sand plus silt (0.1-0.002)	Tex-tural class	>2m
	Pct <2mm											Pc
Berea silt loam:												
(90KY-137-18)												
Ap-------0-8	9.7	72.4	17.9	1.9	3.0	1.8	1.4	1.6	8.1	74.0	sil	1
Bt1------8-13	7.6	70.9	21.5	1.7	2.3	1.5	1.0	1.1	6.5	72.0	sil	1
Bt2-----13-20	5.2	72.4	22.4	1.1	1.7	1.1	0.9	0.4	4.8	72.8	sil	1
Bt3-----20-25	5.0	72.6	22.4	0.7	1.3	1.0	0.9	1.1	3.9	73.7	sil	3
2Cr-----25-29	12.4	56.6	31.0	0.6	2.0	1.5	1.8	6.5	5.9	62.5	sicl	75
Colyer silt loam:												
(90KY-137-14)												
Ap1------0-2	8.9	58.8	32.3	1.3	2.1	2.0	1.8	1.7	7.2	60.5	sicl	19
Ap2------2-9	8.9	55.3	35.8	1.2	2.1	2.0	1.9	1.7	7.2	57.0	sicl	28
Bw-------9-14	7.4	48.6	44.0	1.4	1.7	1.6	1.5	1.2	6.2	49.8	sic	66
Garlin loam:												
(91KY-079-1)												
Ap-------0-7	46.2	31.9	21.9	7.6	5.8	2.4	8.5	21.9	24.3	53.8	l	---
Bw-------7-18	49.5	27.0	23.5	0.4	1.0	1.0	8.5	38.6	10.9	37.9	l	---
Greenbriar silt loam:												
(90KY-137-13)												
Ap-------0-10	7.2	73.2	19.6	2.3	1.7	1.8	1.0	0.4	6.8	73.6	sil	7
Bt1-----10-15	6.7	70.4	22.9	1.8	1.7	1.3	1.0	0.9	5.8	71.3	sil	6
Bt2-----15-26	7.4	68.6	24.0	2.8	1.9	1.0	0.8	0.9	6.5	69.5	sil	31
Bt3-----26-41	3.6	62.1	34.3	0.6	0.7	0.6	0.8	0.9	2.7	63.0	sicl	64
Bt4-----41-48	3.6	61.8	34.6	0.7	0.8	0.8	0.7	0.6	3.0	62.4	sicl	64

Table 19.—Physical Analyses of Selected Soils—Continued

Soil name, report number, horizon, and depth in inches	Total: Sand (2-0.05 mm)	Total: Silt (0.05-0.002 mm)	Total: Clay (<0.002 mm)	Sand: Very coarse (2-1)	Sand: Coarse (1-0.5)	Sand: Medium (0.5-0.25)	Sand: Fine (0.25-0.1)	Sand: Very fine (0.1-0.05)	Sand coarser than very fine (2-0.1)	Very fine sand plus silt (0.1-0.002)	Textural class	Coa >2n
	Pct <2mm											Pc
Lenberg silt loam:												
(90KY-079-1)												
Ap-------0-5	3.0	74.4	22.6	1.2	0.7	0.4	0.3	0.4	2.6	74.8	sil	8
Bt1------5-14	0.8	60.5	38.7	0.1	0.1	0.1	0.2	0.3	0.5	60.8	sicl	---
Bt2-----14-20	0.4	54.3	45.3	---	0.1	0.1	0.1	0.1	0.3	54.4	sic	1
Bt3-----20-30	0.4	55.5	44.1	0.1	0.1	---	0.1	0.1	0.3	55.6	sic	1
BC------30-39	0.3	58.5	41.2	---	0.1	---	0.1	0.1	0.2	58.6	sic	4
Cr------39-55	0.1	61.6	38.3	---	---	---	---	---	0.1	61.6	sicl	---
Trappist silt loam:												
(90KY-137-15)												
Ap-------0-7	6.1	54.0	39.9	0.7	1.4	1.7	1.4	0.9	5.2	54.9	sicl	1
Bt1------7-12	3.3	48.9	47.8	0.4	0.8	0.9	0.7	0.5	2.8	49.4	sic	---
Bt2-----12-20	3.6	48.7	47.7	0.5	0.8	1.0	0.8	0.5	3.1	49.2	sic	1
Bt3-----20-26	4.8	47.4	47.8	1.0	1.1	1.2	1.1	0.4	4.4	47.8	sic	21
C-------26-35	8.7	43.1	48.2	1.2	2.3	2.5	1.9	0.8	7.9	43.9	sic	69

Table 20.—Chemical Analyses of Selected Soils

(A dash indicates material was not detected. A blank indicates that the determination was not made. TR means trace are the typical pedons for the soil series in the survey area. For the location of the pedons, see the section and Their Morphology". Analysis made by the Kentucky Agricultural Experiment Station)

Soil name report number, horizon, and depth in inches	pH		Extractable cations					Cation-exchange capacity		Extractable acidity	Base saturation		Organic matter	Calci carbo ite equi- valen
	H_2O 1-1 0.05mm	KCl 1N 1-1	Ca	Mg	K	Na	Total (TEC)	Ammonium acetate	Sum of cations		Ammonium acetate	Sum of cations		
			--Milliequivalents per 100 grams of soil--							Pct	Pct	Pct	Pct	Pct
Berea silt loam:														
(90KY-137-018)														
Ap----- 0 to 8	4.8	4.2	4.2	0.6	0.1	---	4.9	10.7	15.8	10.9	46	31	3.1	
Bt1---- 8 to 13	5.0	3.8	2.4	0.4	0.1	---	2.9	7.3	10.4	7.5	40	28	0.7	
Bt2---- 13 to 20	5.0	3.7	2.7	0.5	0.1	---	3.3	7.3	11.6	8.3	45	28	0.4	
Bt3---- 20 to 25	4.9	3.5	2.3	0.4	0.1	---	2.8	7.3	12.0	9.2	38	23	0.4	
2Cr---- 25 to 29	4.9	3.7	3.1	0.6	0.2	---	3.9	10.6	19.5	15.6	37	20	1.9	
2R----- 29	4.9	4.1	5.2	1.5	0.4	---	7.1	26.3	22.9	15.8	31	31	5.9	
Colyer silt loam:														
(90KY-137-014)														
Ap1---- 0 to 2	6.2	5.5	21.3	3.7	0.8	TR	25.8	25.8	35.0	9.2	100	74	8.6	
Ap2---- 2 to 9	5.4	4.7	12.0	2.1	0.4	TR	14.5	21.2	27.6	13.1	68	53	5.1	
Bw----- 9 to 14	5.0	4.0	6.2	1.2	0.4	---	7.8	18.3	23.4	15.6	43	33	3.2	
R------ 14 to 18	5.1	4.0	6.0	0.7	0.3	0.1	7.1	19.3	23.5	16.4	37	30	3.6	
Garlin loam:														
(91KY-079-001)														
Ap----- 0 to 7	7.8		8.9	6.4	0.4	TR	15.7	21.4	16.3		73	96	8.8	35.
Bw----- 7 to 18	8.3		5.1	3.1	0.1	TR	8.3	6.5	9.3		128	89	1.8	63.
Greenbriar silt loam:														
(90KY-137-013)														
Ap----- 0 to 10	4.9	4.3	4.7	0.3	0.4	---	5.4	10.9	15.1	9.7	50	36	3.1	
Bt1---- 10 to 15	4.9	3.7	2.2	0.1	0.1	TR	2.4	7.8	12.5	10.1	31	19	0.3	
Bt2---- 15 to 26	4.6	3.6	1.1	0.2	0.2	---	1.2	8.6	12.8	11.3	17	12	0.3	
Bt3---- 26 to 41	4.6	3.6	0.8	0.2	0.2	TR	1.2	10.8	14.5	13.3	11	8	0.3	
Bt4---- 41 to 48	3.7	3.5	0.6	0.2	0.2	TR	1.0	11.2	14.5	13.5	9	7	0.3	
2R----- 48	3.7	3.5	0.4	TR	0.2	0.2	0.2	15.0	14.1	13.3	5	6	2.5	

Table 20.--Chemical Analyses of Selected Soils--Continued

Soil name report number, horizon, and depth in inches	pH		Extractable cations					Cation-exchange capacity		Extract-able acidity	Base saturation		Organic matter	Calc carb ite equi vale
	H_2O 1-1 0.05mm	KCl 1N 1-1	Ca	Mg	K	Na	Total (TEC)	Ammonium acetate	Sum of cations		Ammonium acetate	Sum of cations		
			--Milliequivalents per 100 grams of soil--							Pct	Pct	Pct	Pct	Pc
Lenberg silt loam: (90KY-079-001)														
Ap----- 0 to 5	4.1	3.4	1.4	0.8	0.2	---	2.4	14.0	18.7	16.3	17	13	2.9	
Bt1---- 5 to 14	4.7	3.3	1.1	2.0	0.3	---	3.4	16.2	20.4	17.0	21	17	0.8	
Bt2---- 14 to 20	4.7	3.3	1.0	3.3	0.3	---	4.6	18.3	19.6	15.0	25	23	0.6	
Bt3---- 20 to 30	4.5	3.1	0.5	4.7	0.4	---	5.6	18.2	21.5	15.9	31	26	0.4	
BC----- 30 to 39	4.6	3.1	0.4	6.0	0.3	TR	6.7	16.4	19.8	13.1	41	34	0.4	
Cr----- 39 to 55	4.3	3.0	0.7	7.9	0.4	0.2	9.2	14.1	16.8	7.6	65	55	0.4	
Trappist silty clay loam: (90KY-137-015)														
Ap----- 0 to 7	5.9	5.0	12.9	2.2	0.5	TR	15.6	19.1	26.9	11.3	82	58	5.3	
Bt1---- 7 to 12	4.9	3.8	3.9	1.1	0.4	---	5.4	15.1	21.1	15.7	36	26	1.6	
Bt2---- 12 to 20	4.8	3.7	2.9	0.8	0.4	---	4.1	15.7	23.3	19.2	26	18	1.0	
Bt3---- 20 to 26	4.6	3.7	1.4	0.4	0.3	---	2.1	15.4	21.0	18.9	14	10	1.1	
C------ 26 to 35	4.6	3.7	0.8	0.2	0.3	---	1.3	16.0	22.3	21.0	8	6	1.5	
R------ 35 to 42	4.7	3.7	0.6	0.1	0.3	0.1	1.1	17.7	21.6	20.5	6	5	2.4	

Table 21.—Clay Mineralogy of Selected Soils

(A dash indicates that the material was not detected. A blank indicates that the determination was not made. The soils are the typical pedons for the soil series in the survey area. For the location of the pedons, see the section "Soil Series and their Morphology")

Soil name, report number, horizon, and depth in inches	Potassium K_2O	Iron Fe_2O_3	Aluminum Al_2O_3	Relative amounts of clay minerals*							
				Mica	Kaolinite	Montmorillonite	Vermiculite chlorite	Vermiculite mica	Quartz	Goethite	Lepidocrocit
	Pct	Pct	Pct								
Colyer silt loam: (90KY-137-014)											
Bw------ 9 to 14	4.4	6.0	20	4	1	---	---	1	1	1	1
Lenberg silt loam: (90KY-079-001)											
Bt1----- 5 to 14	4.4	9.6	23	5	2	1	---	2	1	---	---
Bt2-----14 to 20	4.5	10.7	24	4	2	---	1	3	1	---	---
Bt3-----20 to 30	4.7	9.9	24	5	2	---	---	2	1	---	---
Trappist silt loam: (90KY-137-015)											
Bt1----- 7 to 12	3.6	7.3	22	4	2	1	---	2	1	---	---
Bt2-----12 to 20	3.6	8.0	22	3	2	1	---	2	1	---	---
Bt3-----20 to 26	4.0	7.0	22	4	2		---	1	1	---	1

* Relative amounts: 5=dominant, 4=abundant, 3=moderate, 2=small, 1=trace.

Table 22.—Sand-Silt Mineralogy of Selected Soils

(A dash indicates the mineral was not detected. A blank indicates that the determination was not made. The soils are typical of the soil series in the survey area. For the location of the pedons, see the section "Soil Series and Their Morphology")

Soil name, report number, horizon, and depth in inches	Percent resistant minerals				Percent weatherable minerals							
	Quartz	Opaques*	Kao-linite	Total resis-tant min-erals	Bio-tite	Musco-vite	Potas-sium feld-spar	Plagio-clase feld-spar	Amphi-bole	Weather-able aggre-gates**	Calcite	Mica
Berea silt loam:												
(90KY-137-018)												
Bt1---- 8 to 13	73	3	2	78	TR	1	17	3	---	---		
Bt2----13 to 20	73	3	4	80	TR	1	17	14	---	---		
Bt3----20 to 25	72	3	3	78	TR	1	16	3	TR	---		
Garlin loam:												
(91KY-079-001)												
Bw----- 7 to 18	5								---	.3	90	2
Greenbriar silt loam:												
(90KY-137-013)												
Bt1----10 to 15	66	1	---	67	1	TR	10	19	1	1		
Bt3----26 to 41	72	2	---	74	4	1	8	12	1	1		

* Includes plant opal, chalcedony, and tourmaline.

** Includes hornblendes and interstratified materials.

Table 23.—Engineering Index Test Data

(Dashes indicate that data were not determined. Analysis made by the Soil Mechanics Laboratory, Natural
Conservation Service, Fort Worth, Texas)

Soil name, report number, horizon, and depth in inches	Classification	Grain-size distribution: Percentage passing sieve--			Grain-size distribution: Percentage smaller than--				Liquid limit	Plasticity index	Moisture dry density
	Unified	No. 10	No. 40	No. 200	.05 mm	.02 mm	.005 mm	.002 mm			
									Pct		lb/cu ft
Berea silt loam*: (90KY-137-18)											
Bt1, Bt2, Bt3-- 8 to 26	CL	100	100	95	92	81	44	24	29	12	108.5
Greenbriar silt loam*: (90KY-137-13)											
Bt1, Bt2-------10 to 26	CL	100	100	93	90	77	41	23	34	13	108.5
Bt3------------26 to 41	CH	---	---	100	100	97	64	41	55	29	102.0
Lenberg silt loam*: (90KY-079-1)											
Bt1, Bt2, Bt3-- 5 to 30	CL	100	100	94	92	80	45	28	35	14	106.0
Trappist silty clay loam**: (90KY-137-11)											
Bt1, Bt2-------10 to 24	CL	100	100	92	90	82	55	34	42	19	102.0

* The soils are the typical pedons for the soil series in the survey area. For the location of the
section "Soil Series and Their Morphology."

** Location of pedon: About 3.8 miles south of Stanford, Kentucky, 550 feet east of U.S. Highway 27,
north of Fairgrounds Road; lat. 37 degrees 28 minutes 57 seconds N. and long. 84 degrees 38 minutes 15 se

Table 24.—Classification of the Soils

Soil name	Family or higher taxonomic class
Allegheny	Fine-loamy, mixed, mesic Typic Hapludults
Beasley	Fine, mixed, mesic Typic Hapludalfs
Berea	Fine-silty, mixed, mesic Aquic Hapludults
Boonesboro	Fine-loamy, mixed, mesic Fluventic Hapludolls
Caneyville	Fine, mixed, mesic Typic Hapludalfs
Carpenter	Fine-loamy, mixed, mesic Ultic Hapludalfs
Chenault	Fine-loamy, mixed, mesic Typic Hapludalfs
Christian	Clayey, mixed, mesic Typic Hapludults
Colyer	Clayey-skeletal, mixed, mesic Lithic Dystrochrepts
Crider	Fine-silty, mixed, mesic Typic Paleudalfs
Culleoka	Fine-loamy, mixed, mesic Ultic Hapludalfs
Cynthiana	Clayey, mixed, mesic Lithic Hapludalfs
Donerail	Fine, mixed, mesic Oxyaquic Argiudolls
Eden	Fine, mixed, mesic Typic Hapludalfs
Elk	Fine-silty, mixed, mesic Ultic Hapludalfs
Fairmount	Clayey, mixed, mesic Lithic Hapludolls
Faywood	Fine, mixed, mesic Typic Hapludalfs
Frankstown	Fine-loamy, mixed, mesic Typic Hapludults
Garlin	Fine-loamy, carbonatic, mesic Rendollic Eutrochrepts
Garmon	Fine-loamy, mixed, mesic Dystric Eutrochrepts
Gilpin	Fine-loamy, mixed, mesic Typic Hapludults
Greenbriar	Fine-silty, mixed, mesic Typic Hapludults
Hagerstown	Fine, mixed, mesic Typic Hapludalfs
Jessietown	Fine-silty, mixed, mesic Typic Hapludults
Johnsburg	Fine-silty, mixed, mesic Aquic Fragiudults
Lawrence	Fine-silty, mixed, mesic Aquic Fragiudalfs
Lenberg	Fine, mixed, mesic Ultic Hapludalfs
Lily	Fine-loamy, siliceous, mesic Typic Hapludults
Lowell	Fine, mixed, mesic Typic Hapludalfs
Melvin	Fine-silty, mixed, nonacid, mesic Typic Fluvaquents
Monongahela	Fine-loamy, mixed, mesic Typic Fragiudults
Mullins	Fine-silty, mixed, mesic Typic Fragiaquults
Newark	Fine-silty, mixed, nonacid, mesic Aeric Fluvaquents
Nicholson	Fine-silty, mixed, mesic Oxyaquic Fragiudalfs
Nolin	Fine-silty, mixed, mesic Dystric Fluventic Eutrochrepts
Otwell	Fine-silty, mixed, mesic Oxyaquic Fragiudalfs
Pricetown	Fine-silty, siliceous, mesic Typic Paleudults
Robertsville	Fine-silty, mixed, mesic Typic Fragiaqualfs
Sandview	Fine-silty, mixed, mesic Typic Hapludalfs
Shrouts	Fine, mixed, mesic Typic Hapludalfs
Skidmore	Loamy-skeletal, mixed, mesic Dystric Fluventic Eutrochrepts
Teddy	Fine-loamy, siliceous, mesic Typic Fragiudults
Tilsit	Fine-silty, mixed, mesic Typic Fragiudults
Trappist	Clayey, mixed, mesic Typic Hapludults
Yosemite	Loamy-skeletal, mixed, nonacid, mesic Aeric Fluvaquents

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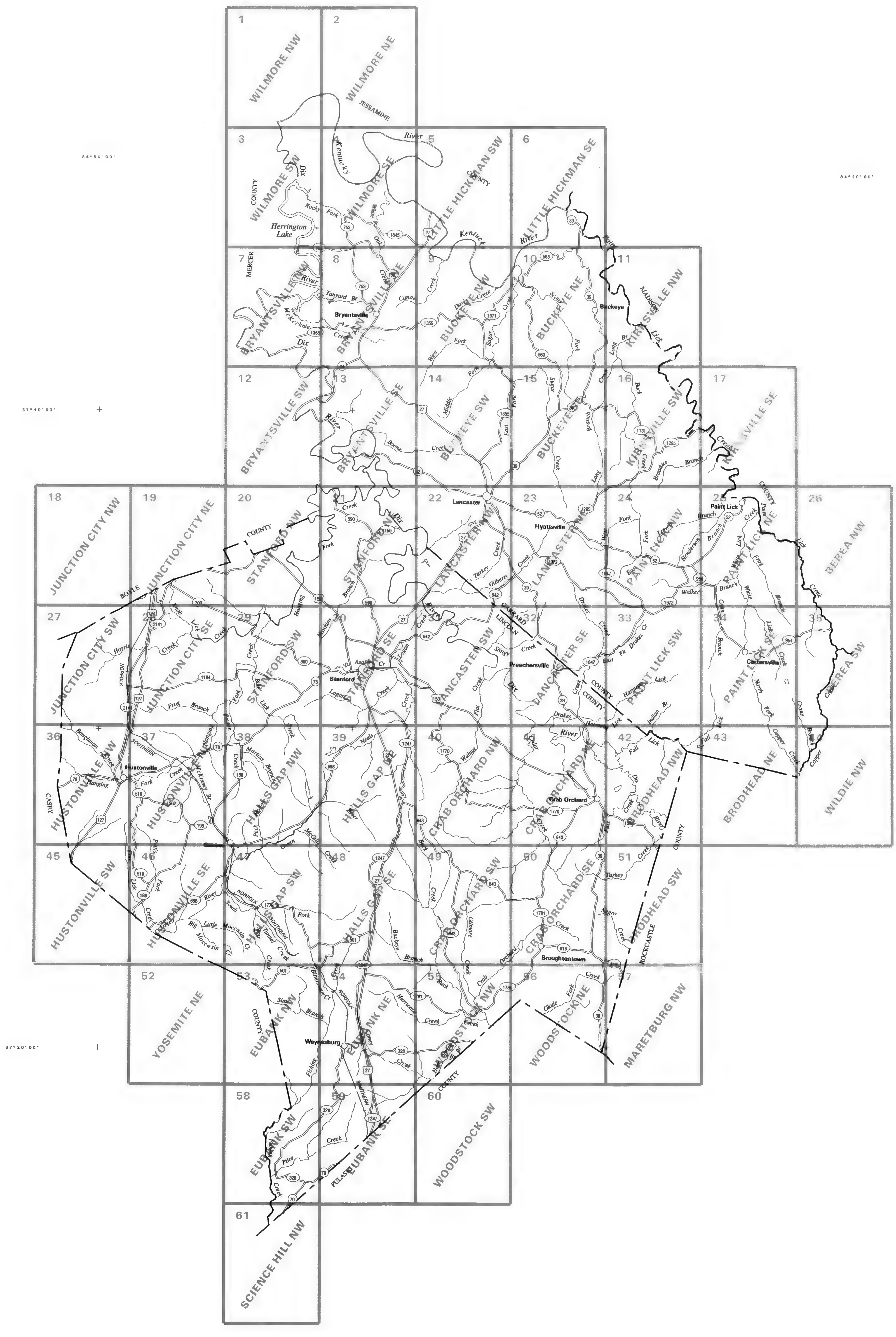


SECTIONALIZED TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

N

INDEX TO MAP SHEETS
GARRARD AND LINCOLN COUNTIES, KENTUCKY

MILES

KILOMETERS

SCALE = 1:130000

SOIL LEGEND

Map symbols consist of a combination of letters or of letters and a number. The first two letters represent the kind of soil. A capital letter following these letters indicates the class of slope. Symbols without a slope letter are for nearly level soils or for miscellaneous areas. A final number of 2 indicates that the soil is eroded, and 3 indicates that it is severely eroded.

SYMBOL	NAME
AlB	Allegheny loam, 2 to 6 percent slopes, rarely flooded
AlC2	Allegheny loam, 6 to 12 percent slopes, eroded
BaB	Beasley silt loam, 2 to 6 percent slopes
BbC2	Beasley silty clay loam, 6 to 12 percent slopes, eroded
BeB	Berea silt loam, 2 to 6 percent slopes
Bo	Boonesboro silt loam, frequently flooded
CaE2	Caneyville silt loam, 12 to 30 percent slopes, eroded, rocky
CeB	Carpenter gravelly silt loam, 2 to 6 percent slopes
CeC	Carpenter gravelly silt loam, 6 to 12 percent slopes
CgE2	Carpenter-Lenberg complex, 12 to 30 percent slopes, eroded
ChB	Chenault gravelly silt loam, 2 to 6 percent slopes
ChC	Chenault gravelly silt loam, 6 to 12 percent slopes
CkC	Chenault-Lowell complex, phosphatic, 6 to 12 percent slopes
ClD2	Chenault-Faywood complex, phosphatic, 12 to 25 percent slopes, eroded, rocky
CmB	Christian silt loam, 2 to 6 percent slopes
CmC2	Christian silt loam, 6 to 12 percent slopes, eroded
CoD2	Christian silty clay loam, 12 to 25 percent slopes, eroded
CpF2	Colyer-Trappist complex, 25 to 60 percent slopes, eroded, very rocky
CrB	Crider silt loam, 2 to 6 percent slopes
CrC	Crider silt loam, 6 to 12 percent slopes
CuB	Culleoka silt loam, 2 to 6 percent slopes
CuC2	Culleoka silt loam, 6 to 12 percent slopes, eroded
CuD2	Culleoka silt loam, 12 to 25 percent slopes, eroded
CyF2	Cynthiana-Faywood complex, 25 to 50 percent slopes, eroded, very rocky
DAM	Dam, large
DoB	Donerail silt loam, 2 to 6 percent slopes
EdD2	Eden flaggy silty clay loam, 8 to 25 percent slopes, eroded
EfF2	Eden-Culleoka association, 25 to 50 percent slopes, eroded, stony
EkB	Elk silt loam, 2 to 6 percent slopes
EkC	Elk silt loam, 6 to 12 percent slopes
EmB	Elk silt loam, 2 to 6 percent slopes, rarely flooded
FaC2	Fairmount silty clay loam, 6 to 12 percent slopes, eroded, very rocky
FdF2	Fairmount-Faywood-Rock outcrop complex, 25 to 50 percent slopes, eroded
FeC2	Faywood-Cynthiana complex, 6 to 12 percent slopes, eroded, rocky
FeD2	Faywood-Cynthiana complex, 12 to 25 percent slopes, eroded, very rocky
FfC2	Faywood-Fairmount complex, phosphatic, 6 to 12 percent slopes, eroded, rocky
FfD2	Faywood-Fairmount complex, phosphatic, 12 to 25 percent slopes, eroded, very rocky
FoD2	Faywood-Shrouts complex, 12 to 25 percent slopes, eroded, rocky
FoF2	Faywood-Shrouts complex, 25 to 60 percent slopes, eroded, rocky
FrB	Frankstown gravelly silt loam, 2 to 6 percent slopes
FrC	Frankstown gravelly silt loam, 6 to 12 percent slopes
FrD2	Frankstown gravelly silt loam, 12 to 25 percent slopes, eroded
GaC2	Garlin-Shrouts complex, 6 to 12 percent slopes, eroded
GaD2	Garlin-Shrouts complex, 12 to 25 percent slopes, eroded, rocky
GmF	Garmon channery silt loam, 25 to 80 percent slopes, rocky
GnB	Gilpin silt loam, 2 to 6 percent slopes
GnC2	Gilpin silt loam, 6 to 12 percent slopes, eroded
GrB	Greenbriar silt loam, 2 to 6 percent slopes
HgC	Hagerstown silt loam, 6 to 12 percent slopes
JeB	Jessietown silt loam, 2 to 6 percent slopes
JeC	Jessietown silt loam, 6 to 12 percent slopes
Jm	Johnsburg-Mullins complex
Jr	Johnsburg-Robertsville complex
La	Lawrence silt loam, terrace, rarely flooded
Le	Lawrence-Robertsville complex
LgC2	Lenberg silty clay loam, 6 to 12 percent slopes, eroded
LlB	Lily loam, 2 to 6 percent slopes
LlC	Lily loam, 6 to 12 percent slopes
LoB	Lowell silt loam, 2 to 6 percent slopes
LoC2	Lowell silt loam, 6 to 12 percent slopes, eroded
LpD2	Lowell-Faywood complex, 12 to 25 percent slopes, eroded, rocky
LsB	Lowell silt loam, phosphatic, 2 to 6 percent slopes
LsC2	Lowell silt loam, phosphatic, 6 to 12 percent slopes, eroded
LtD2	Lowell-Faywood complex, phosphatic, 12 to 25 percent slopes, eroded
Me	Melvin silt loam, frequently flooded
MoB	Monongahela loam, 2 to 6 percent slopes
Ne	Newark silt loam, frequently flooded
NhB	Nicholson silt loam, 2 to 6 percent slopes
NhC2	Nicholson silt loam, 6 to 12 percent slopes, eroded
No	Nolin silt loam, frequently flooded
OtB	Otwell silt loam, 2 to 6 percent slopes
OmB	Otwell silt loam, 2 to 6 percent slopes, rarely flooded
PrB	Pricetown silt loam, 2 to 6 percent slopes
PrC	Pricetown silt loam, 6 to 12 percent slopes
[illegible]	Robertsville silt loam, terrace, rarely flooded
RcF	Rock outcrop-Fairmount complex, 50 to 120 percent slopes
SaB	Sandview silt loam, 2 to 6 percent slopes
SaC	Sandview silt loam, 6 to 12 percent slopes
SdB	Sandview silt loam, phosphatic, 2 to 6 percent slopes
SdC	Sandview silt loam, phosphatic, 6 to 12 percent slopes
SeC2	Shrouts silty clay loam, 6 to 12 percent slopes, eroded
SfD3	Shrouts-Cynthiana complex, 12 to 25 percent slopes, severely eroded, rocky
SgF3	Shrouts-Garlin-Cynthiana complex, 25 to 50 percent slopes, severely eroded, very rocky
Sk	Skidmore very gravelly silt loam, frequently flooded
TeB	Teddy silt loam, 2 to 6 percent slopes
TlB	Tilsit silt loam, 2 to 6 percent slopes
TlC	Tilsit silt loam, 6 to 12 percent slopes
TpB	Trappist silt loam, 2 to 6 percent slopes
TpC2	Trappist silty clay loam, 6 to 12 percent slopes, eroded
TrD2	Trappist-Colyer complex, 12 to 25 percent slopes, eroded
W	Water
Yo	Yosemite gravelly silt loam, frequently flooded

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES
- National, state, or province
- County or parish
- Minor civil division
- Reservation (national forest or park, state forest or park)
- Land grant
- Limit of soil survey (lable) and/or denied access area
- Field sheet matchline & neatline
- Previously Published Survey

OTHER BOUNDARY (label)
- Airport, airfield
- Cemetery
- City/county park

STATE COORDINATE TICK 1 890 000 FEET

LAND DIVISION CORNER (section and land grants)

GEOGRAPHIC COORDINATE TICK

TRANSPORTATION
- Divided roads
- Other roads
- Trail

ROAD EMBLEM & DESIGNATIONS
- Interstate
- Federal
- State
- County, farm or ranch

RAILROAD

POWER TRANSMISSION LINE (normally not shown)

PIPE LINE (normally not shown)

FENCE (normally not shown)

LEVEES
- Without road
- With road
- With railroad
- Single side slope (showing actual feature location)

DAMS
- Medium or Small

LANDFORM FEATURES
- Prominent hill or peak
- Soil Sample Site

MISCELLANEOUS CULTURAL FEATURES
- Farmstead, house (omit in urban areas)
- Church
- School
- Other Religion (label) — Mt Carmel
- Located object (label) — Ranger Station
- Tank (label) — Petroleum
- Lookout Tower
- Oil and/or Natural Gas Wells
- Windmill
- Lighthouse

HYDROGRAPHIC FEATURES

STREAMS
- Perennial, double line
- Perennial, single line
- Intermittent
- Drainage end

DRAINAGE AND IRRIGATION
- Double-line canal (label) — CANAL
- Perennial drainage and/or irrigation ditch
- Intermittent drainage and/ or irrigation ditch

SMALL LAKES, PONDS AND RESERVOIRS
- Perennial water
- Miscellaneous water
- Flood pool line — FLOOD POOL LINE

MISCELLANEOUS WATER FEATURES
- Spring
- Well, artesian
- Well, irrigation

SPECIAL SYMBOLS FOR SOIL SURVEY AND SSURGO

SOIL DELINEATIONS AND SYMBOLS — DoB EkB

LANDFORM FEATURES

ESCARPMENTS
- Bedrock
- Other than bedrock

SHORT STEEP SLOPE

GULLY

DEPRESSION, closed

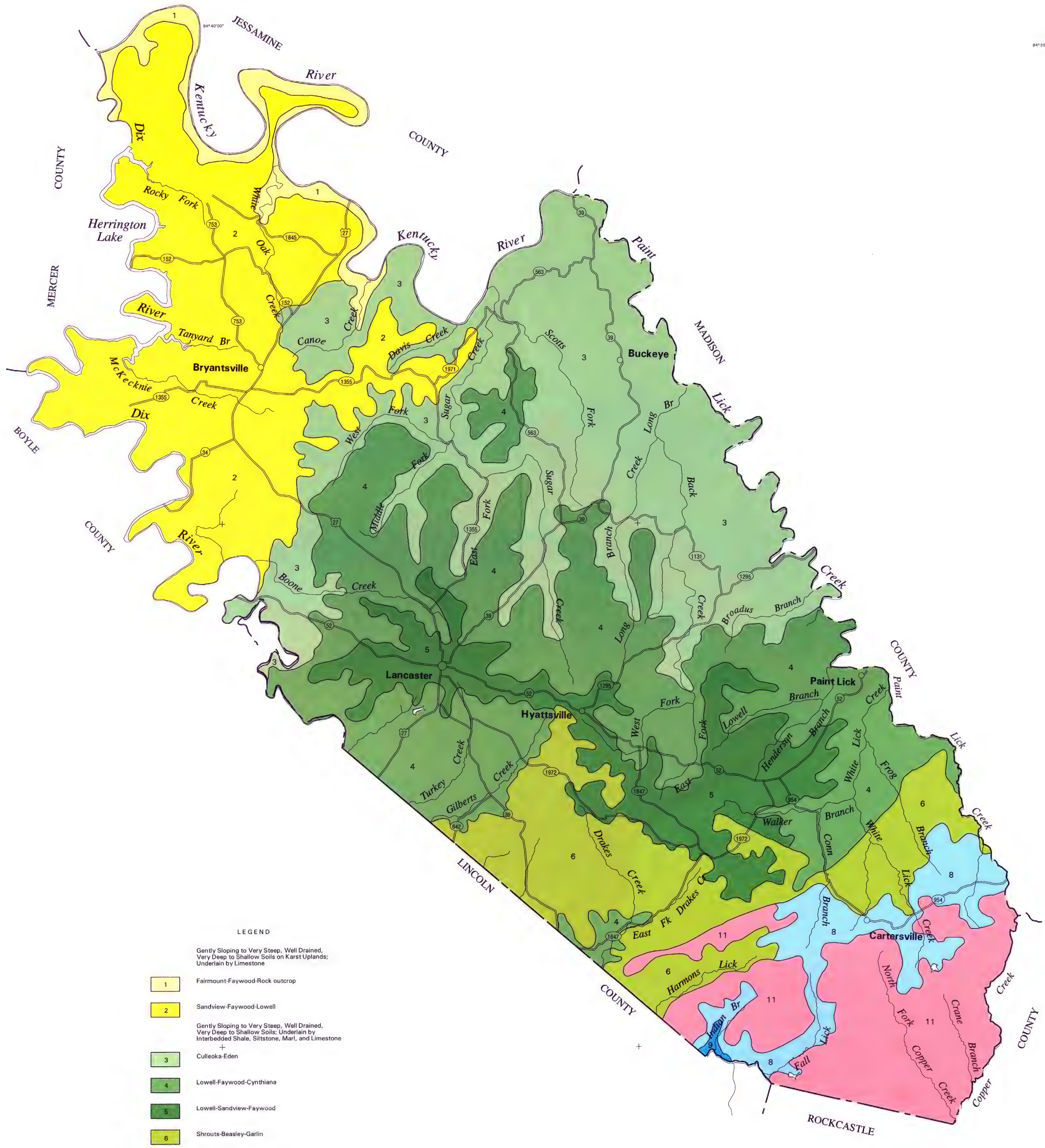
SINKHOLE

EXCAVATIONS

PITS
- Borrow pits
- Gravel pit
- Mine or quarry

LANDFILL

MISCELLANEOUS SURFACE FEATURES
- Blowout
- Clay spot
- Gravelly spot
- Lava flow
- Marsh or swamp
- Rock outcrop (includes sandstone and shale)
- Saline spot
- Sandy spot
- Severely eroded spot
- Slide or slip
- Sodic spot
- Spoil area
- Stony spot
- Very stony spot
- Wet spot



LEGEND

Gently Sloping to Very Steep, Well Drained, Very Deep to Shallow Soils on Karst Uplands; Underlain by Limestone

- 1 Fairmount-Faywood-Rock outcrop
- 2 Sandview-Faywood-Lowell

Gently Sloping to Very Steep, Well Drained, Very Deep to Shallow Soils; Underlain by Interbedded Shale, Siltstone, Marl, and Limestone

- 3 Culleoka-Eden
- 4 Lowell-Faywood-Cynthiana
- 5 Lowell-Sandview-Faywood
- 6 Shrouts-Beasley-Garlin
- 7 Crider-Nicholson-Hagerstown

Nearly Level to Very Steep, Well Drained to Somewhat Poorly Drained, Very Deep to Moderately Deep Soils on Uplands and Flood Plains; Underlain by Shale, Siltstone, and Limestone or Mixed Alluvium

- 8 Trappist-Tilsit-Lenberg
- 9 Newark-Nolin-Yosemite
- 10 Tilsit-Shrouts

Gently Sloping to Very Steep, Well Drained and Moderately Well Drained, Very Deep and Deep Soils on Uplands; Underlain by Limestone, Siltstone, and Shale

- 11 Garmon-Carpenter-Lenberg
- 12 Garmon-Frankstown-Carpenter
- 13 Pricetown-Teddy-Frankstown
- 14 Christian-Frankstown

N

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
KENTUCKY NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
KENTUCKY ARICULTURAL EXPERIMENT STATION

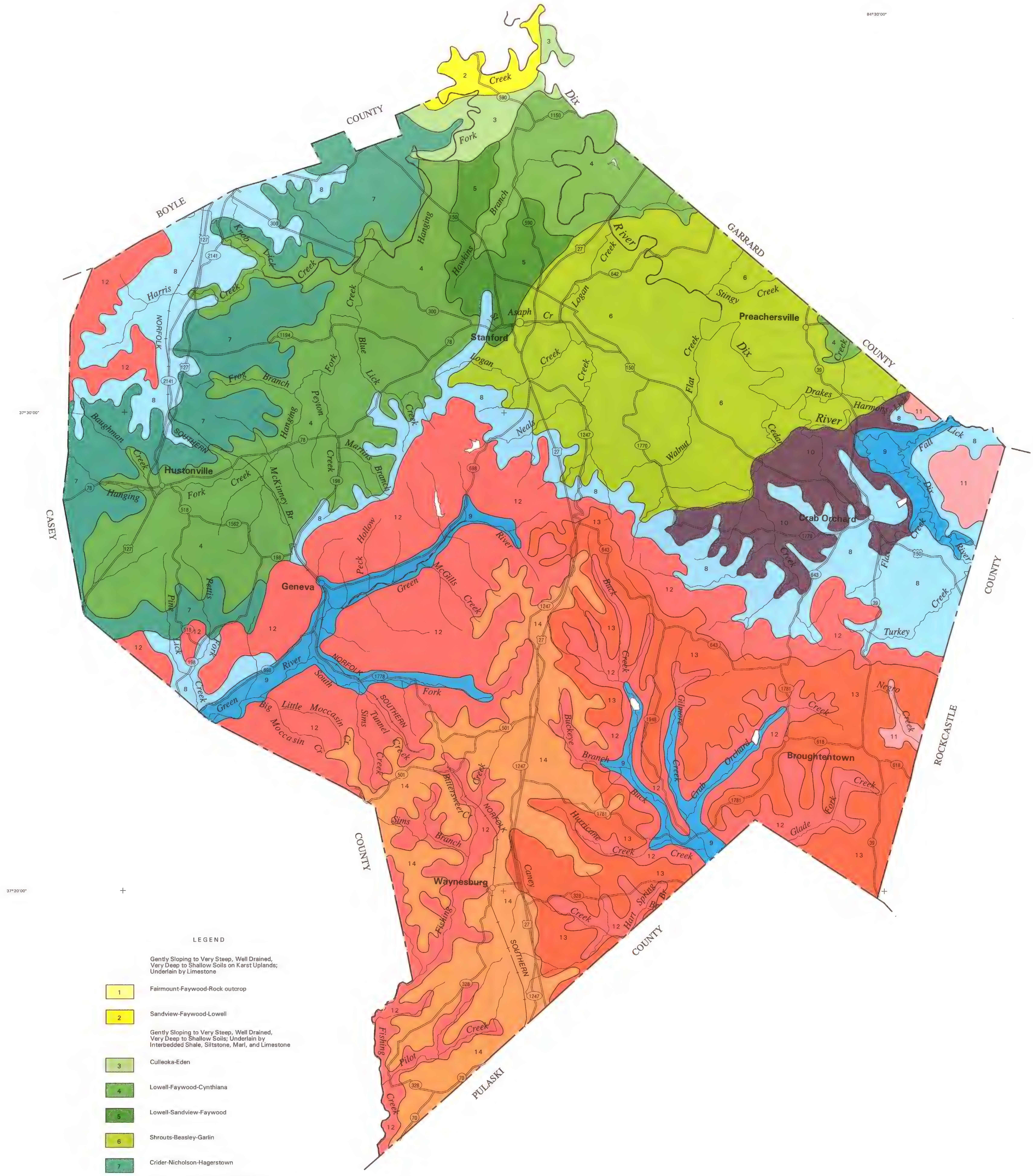
GENERAL SOIL MAP
GARRARD COUNTY, KENTUCKY

1 0 1 2 3
MILES

1 0 1 2 3 4 5 6
KILOMETERS

SCALE = 1:80000

Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.



LEGEND

Gently Sloping to Very Steep, Well Drained, Very Deep to Shallow Soils on Karst Uplands; Underlain by Limestone

- 1 Fairmount-Faywood-Rock outcrop
- 2 Sandview-Faywood-Lowell

Gently Sloping to Very Steep, Well Drained, Very Deep to Shallow Soils; Underlain by Interbedded Shale, Siltstone, Marl, and Limestone

- 3 Culleoka-Eden
- 4 Lowell-Faywood-Cynthiana
- 5 Lowell-Sandview-Faywood
- 6 Shrouts-Beasley-Garlin
- 7 Crider-Nicholson-Hagerstown

Nearly Level to Very Steep, Well Drained to Somewhat Poorly Drained, Very Deep to Moderately Deep Soils on Uplands and Flood Plains; Underlain by Shale, Siltstone, and Limestone or Mixed Alluvium

- 8 Trappist-Tilsit-Lenberg
- 9 Newark-Nolin-Yosemite
- 10 Tilsit-Shrouts

Gently Sloping to Very Steep, Well Drained and Moderately Well Drained, Very Deep and Deep Soils on Uplands; Underlain by Limestone, Siltstone, and Shale

- 11 Garmon-Carpenter-Lenberg
- 12 Garmon-Frankstown-Carpenter
- 13 Pricetown-Teddy-Frankstown
- 14 Christian-Frankstown

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
KENTUCKY NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
KENTUCKY ARICULTURAL EXPERIMENT STATION

GENERAL SOIL MAP
LINCOLN COUNTY, KENTUCKY

1 0 1 2 3
MILES

1 0 1 2 3 4 5 6
KILOMETERS

SCALE = 1:85000

Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.

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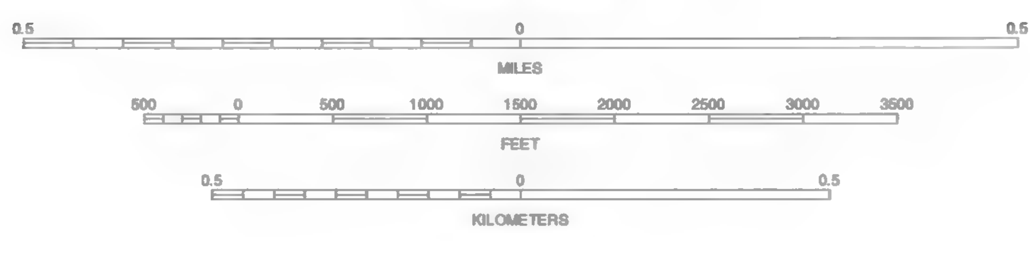
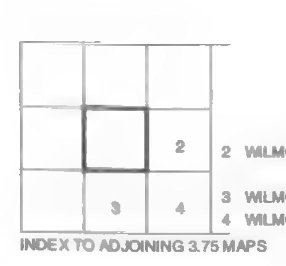
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:12000





WILMORE NW, KENTUCKY
3.75 MINUTE SERIES
SHEET NUMBER 1 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

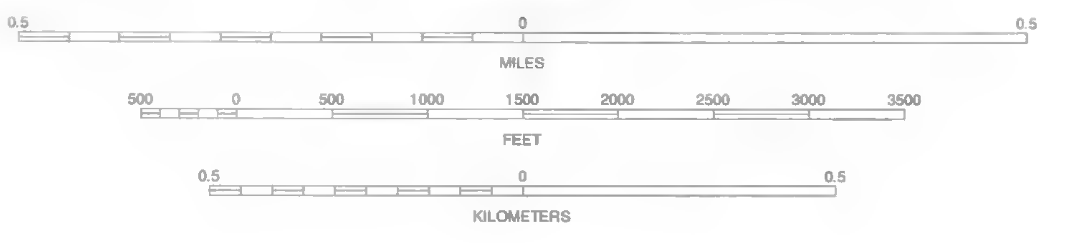
GARRARD AND LINCOLN COUNTIES , KENTUCKY
WILMORE NE QUADRANGLE
SHEET NUMBER 2 OF 61

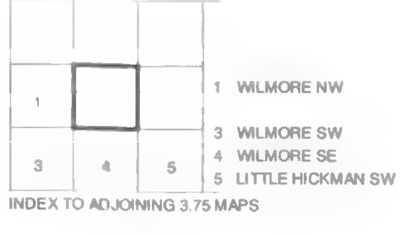
This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1997-1998 aerial photography. Hydrography information was acquired from the Natural Resources Conservation Service. The hydrography layer was edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

QUARTER QUADRANGLE LOCATION

SCALE 1:12000





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WILMORE NE, KENTUCKY
3.75 MINUTE SERIES
SHEET NUMBER 2 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

GARRARD AND LINCOLN COUNTIES, KENTUCKY
WILMORE SW QUADRANGLE
SHEET NUMBER 3 OF 61

84° 45′00″ — 37° 48′45″ — 84° 41′15″ — 37° 45′00″

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES — FEET — KILOMETERS

1 WILMORE NW
2 WILMORE NE
4 WILMORE SE
7 BRYANTSVILLE NW
8 BRYANTSVILLE NE

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WILMORE SW, KENTUCKY
3.75 MINUTE SERIES
SHEET NUMBER 3 OF 61

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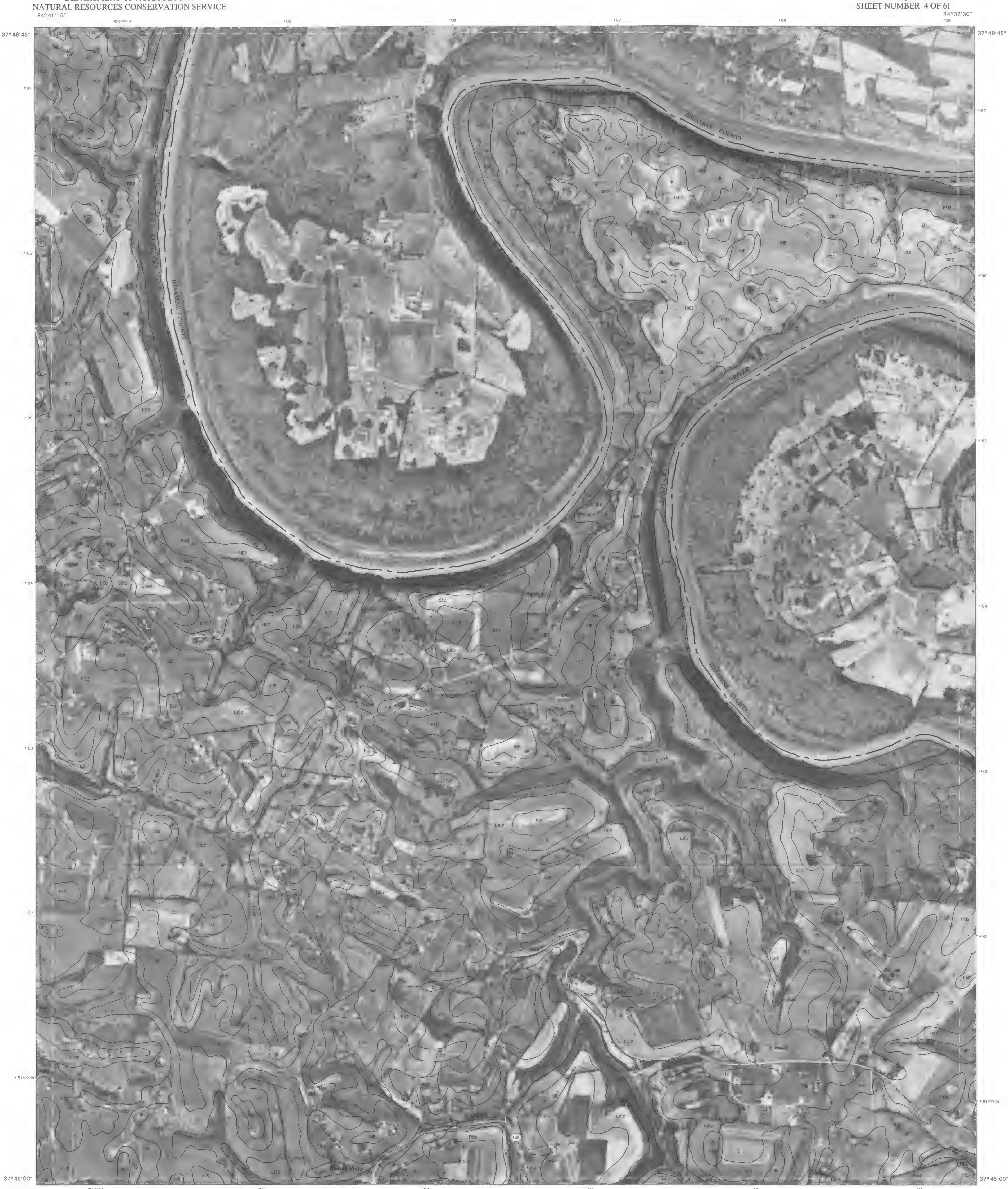
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

GARRARD AND LINCOLN COUNTIES , KENTUCKY
WILMORE SE QUADRANGLE
SHEET NUMBER 4 OF 61



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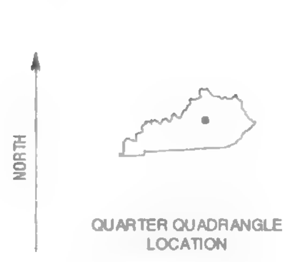
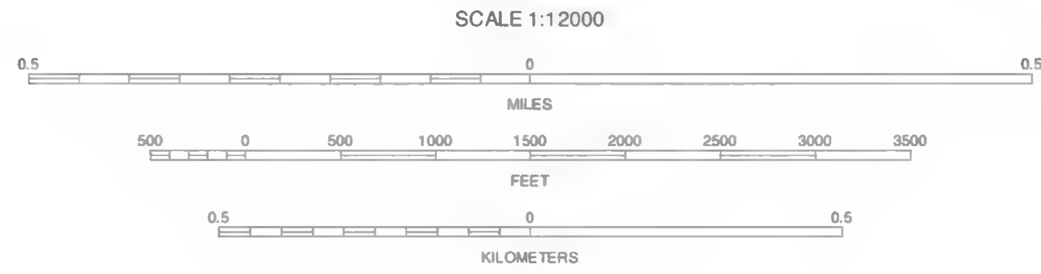
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUARTER QUADRANGLE LOCATION

SCALE 1:12000



1 WILMORE NW
2 WILMORE NE
3 WILMORE SW
5 LITTLE HICKMAN SW
7 BRYANTSVILLE NW
8 BRYANTSVILLE NE
9 BUCKEYE NW

INDEX TO ADJOINING 3.75 MAPS

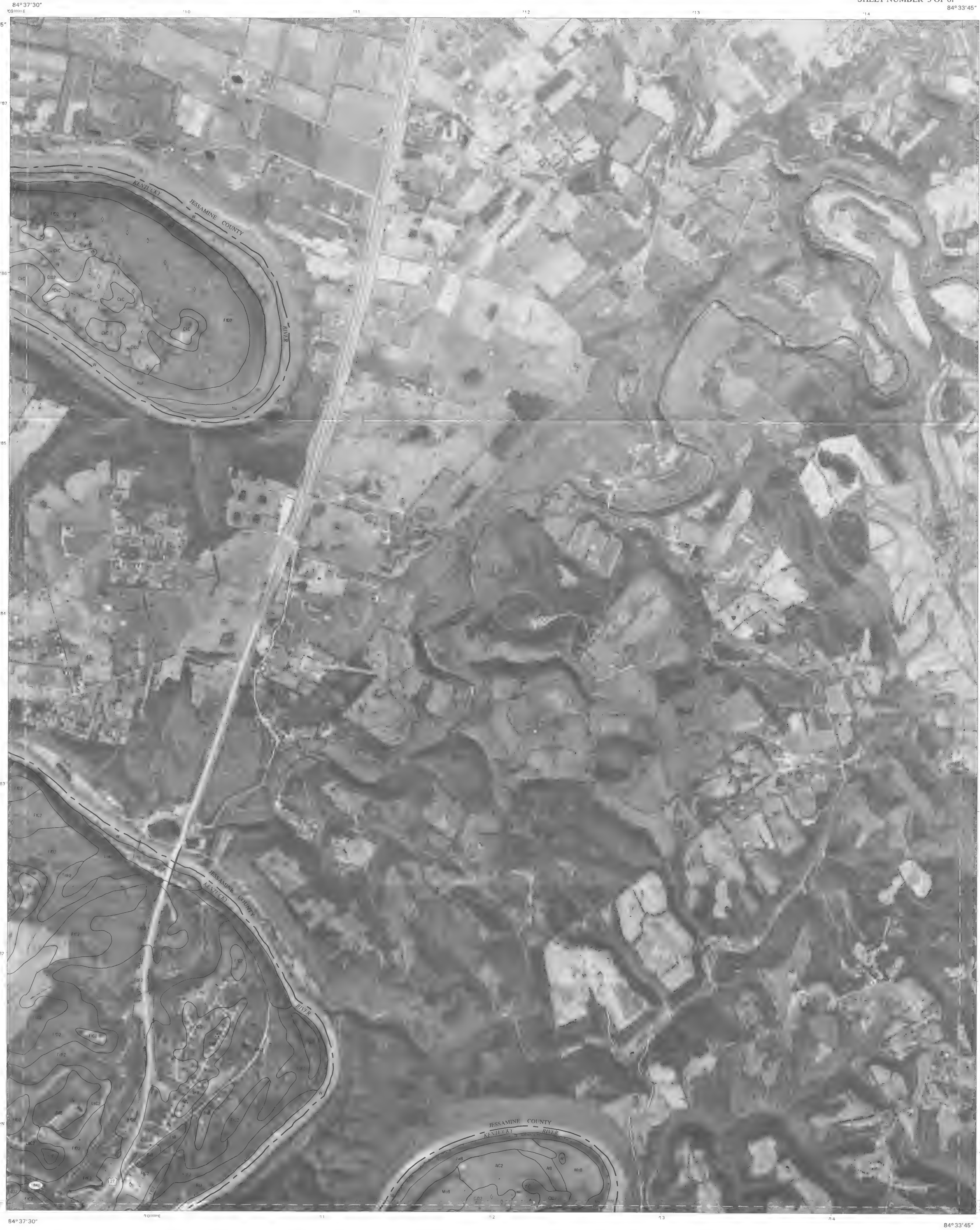
WILMORE SE, KENTUCKY

3.75 MINUTE SERIES
SHEET NUMBER 4 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

GARRARD AND LINCOLN COUNTIES, KENTUCKY
LITTLE HICKMAN SW QUADRANGLE
SHEET NUMBER 5 OF 61



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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

2		
4		6
8	9	10

2 WILMORE NE
4 WILMORE SE
6 LITTLE HICKMAN SE
8 BRYANTSVILLE NE
9 BUCKEYE NW
10 BUCKEYE NE

INDEX TO ADJOINING 3.75 MAPS

LITTLE HICKMAN SW, KENTUCKY

3.75 MINUTE SERIES
SHEET NUMBER 5 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

GARRARD AND LINCOLN COUNTIES , KENTUCKY
LITTLE HICKMAN SE QUADRANGLE
SHEET NUMBER 6 OF 61

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1997-1998 aerial photography. Hydrography information was acquired from the Natural Resources Conservation Service. The hydrography layer was edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

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NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

5 LITTLE HICKMAN SW
9 BUCKEYE NW
10 BUCKEYE NE
11 KIRKSVILLE NW

INDEX TO ADJOINING 3.75 MAPS

LITTLE HICKMAN SE, KENTUCKY
3.75 MINUTE SERIES
SHEET NUMBER 6 OF 61

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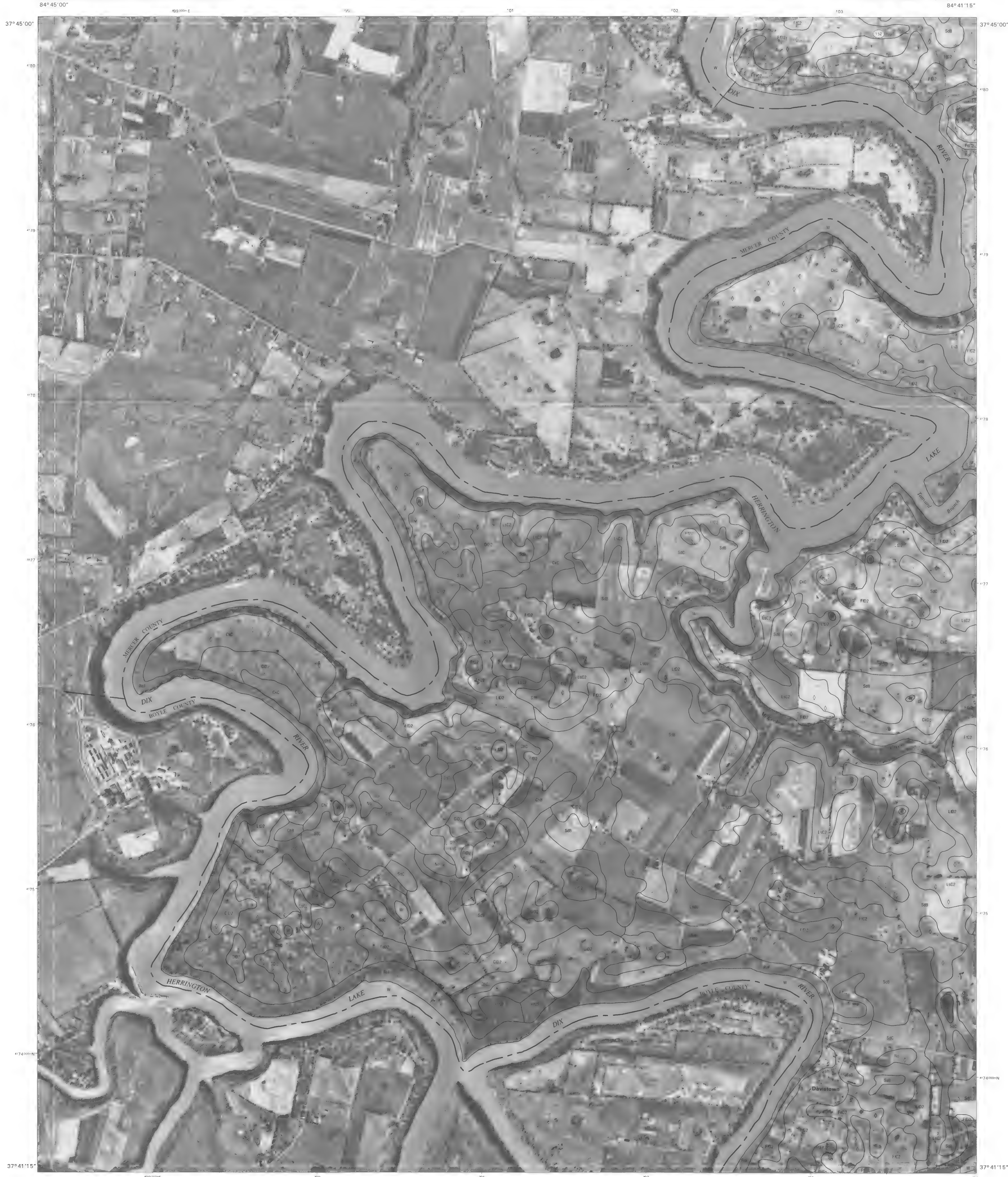
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

GARRARD AND LINCOLN COUNTIES , KENTUCKY
BRYANTSVILLE NW QUADRANGLE
SHEET NUMBER 7 OF 61



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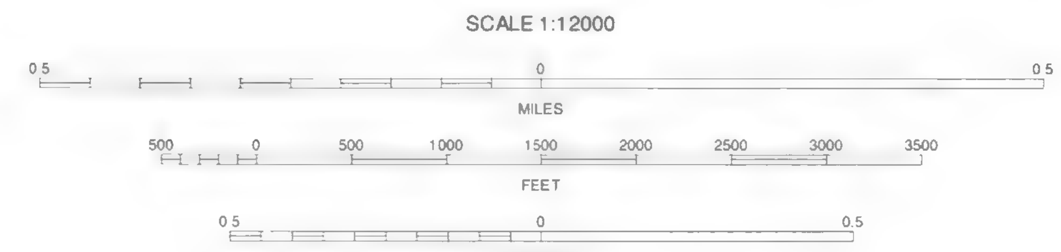
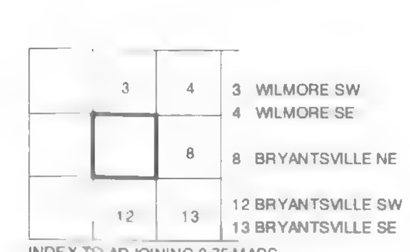
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.





BRYANTSVILLE NW, KENTUCKY
3.75 MINUTE SERIES
SHEET NUMBER 7 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

GARRARD AND LINCOLN COUNTIES, KENTUCKY
BRYANTSVILLE NE QUADRANGLE
SHEET NUMBER 8 OF 61

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1997-1998 aerial photography. Hydrography information was acquired from the Natural Resources Conservation Service. The hydrography layer was edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

3 WILMORE SW
4 WILMORE SE
5 LITTLE HICKMAN SW
7 BRYANTSVILLE NW
9 BUCKEYE NW
12 BRYANTSVILLE SW
13 BRYANTSVILLE SE
14 BUCKEYE SW

INDEX TO ADJOINING 3.75 MAPS

BRYANTSVILLE NE, KENTUCKY
3.75 MINUTE SERIES
SHEET NUMBER 8 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
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GARRARD AND LINCOLN COUNTIES, KENTUCKY
BUCKEYE NW QUADRANGLE
SHEET NUMBER 9 OF 61

84° 37′30″ | 84° 33′45″

37° 45′00″ | 37° 45′00″

37° 41′15″ | 37° 41′15″

84° 37′30″ | 84° 33′45″

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

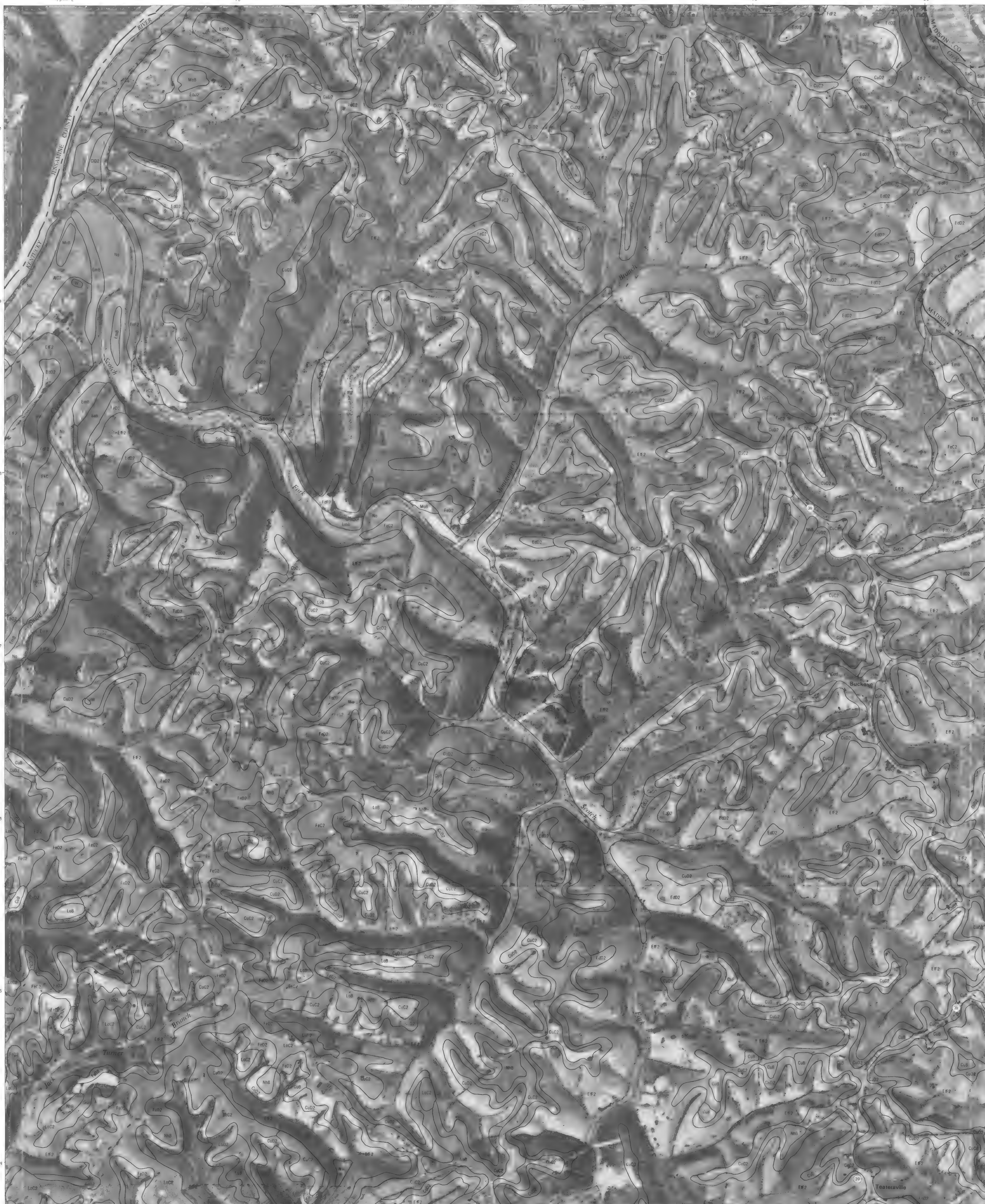
4 WILMORE SE
5 LITTLE HICKMAN SW
6 LITTLE HICKMAN SE
8 BRYANTSVILLE NE
10 BUCKEYE NE
13 BRYANTSVILLE SE
14 BUCKEYE SW
15 BUCKEYE SE

INDEX TO ADJOINING 3.75 MAPS

BUCKEYE NW, KENTUCKY
3.75 MINUTE SERIES
SHEET NUMBER 9 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

84° 33'45" 84° 30'00"
37° 45'00" 37° 45'00"



37° 41'15" 37° 41'15"
84° 33'45" 84° 30'00"

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

5	6	
9		11
14	15	16

5 LITTLE HICKMAN SW
6 LITTLE HICKMAN SE
9 BUCKEYE NW
11 KIRKSVILLE NW
14 BUCKEYE SW
15 BUCKEYE SE
16 KIRKSVILLE SW

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BUCKEYE NE, KENTUCKY

3.75 MINUTE SERIES
SHEET NUMBER 10 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

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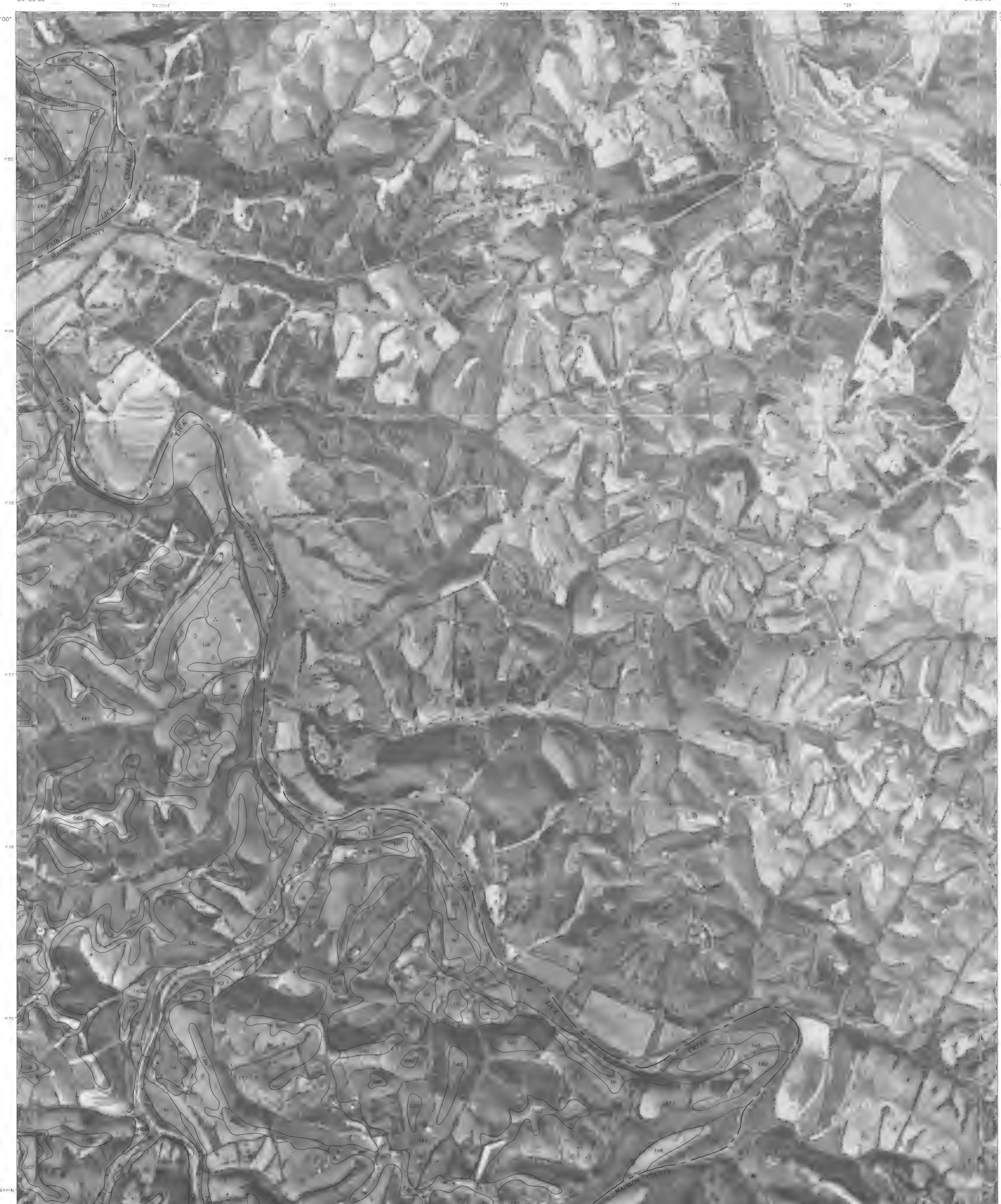
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

GARRARD AND LINCOLN COUNTIES, KENTUCKY
KIRKSVILLE NW QUADRANGLE
SHEET NUMBER 11 OF 61



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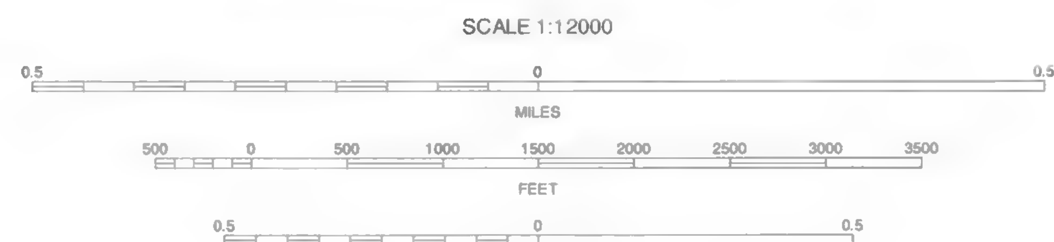
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

QUARTER QUADRANGLE LOCATION

SCALE 1:12000



6		
10	■	
15	16	17

6 LITTLE HICKMAN SE
10 BUCKEYE NE
15 BUCKEYE SE
16 KIRKSVILLE SW
17 KIRKSVILLE SE

INDEX TO ADJOINING 3.75 MAPS

KIRKSVILLE NW, KENTUCKY

3.75 MINUTE SERIES
SHEET NUMBER 11 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

7 BRYANTSVILLE NW
8 BRYANTSVILLE NE
13 BRYANTSVILLE SE
19 JUNCTION CITY NE
20 STANFORD NW
21 STANFORD NE

INDEX TO ADJOINING 3.75 MAPS

BRYANTSVILLE SW, KENTUCKY

3.75 MINUTE SERIES

SHEET NUMBER 12 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

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GARRARD AND LINCOLN COUNTIES , KENTUCKY
BRYANTSVILLE SE QUADRANGLE
SHEET NUMBER 13 OF 61

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1997-1998 aerial photography. Hydrography information was acquired from the Natural Resources Conservation Service. The hydrography layer was edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

7 BRYANTSVILLE NW
8 BRYANTSVILLE NE
9 BUCKEYE NW
12 BRYANTSVILLE SW
14 BUCKEYE SW
20 STANFORD NW
21 STANFORD NE
22 LANCASTER NW

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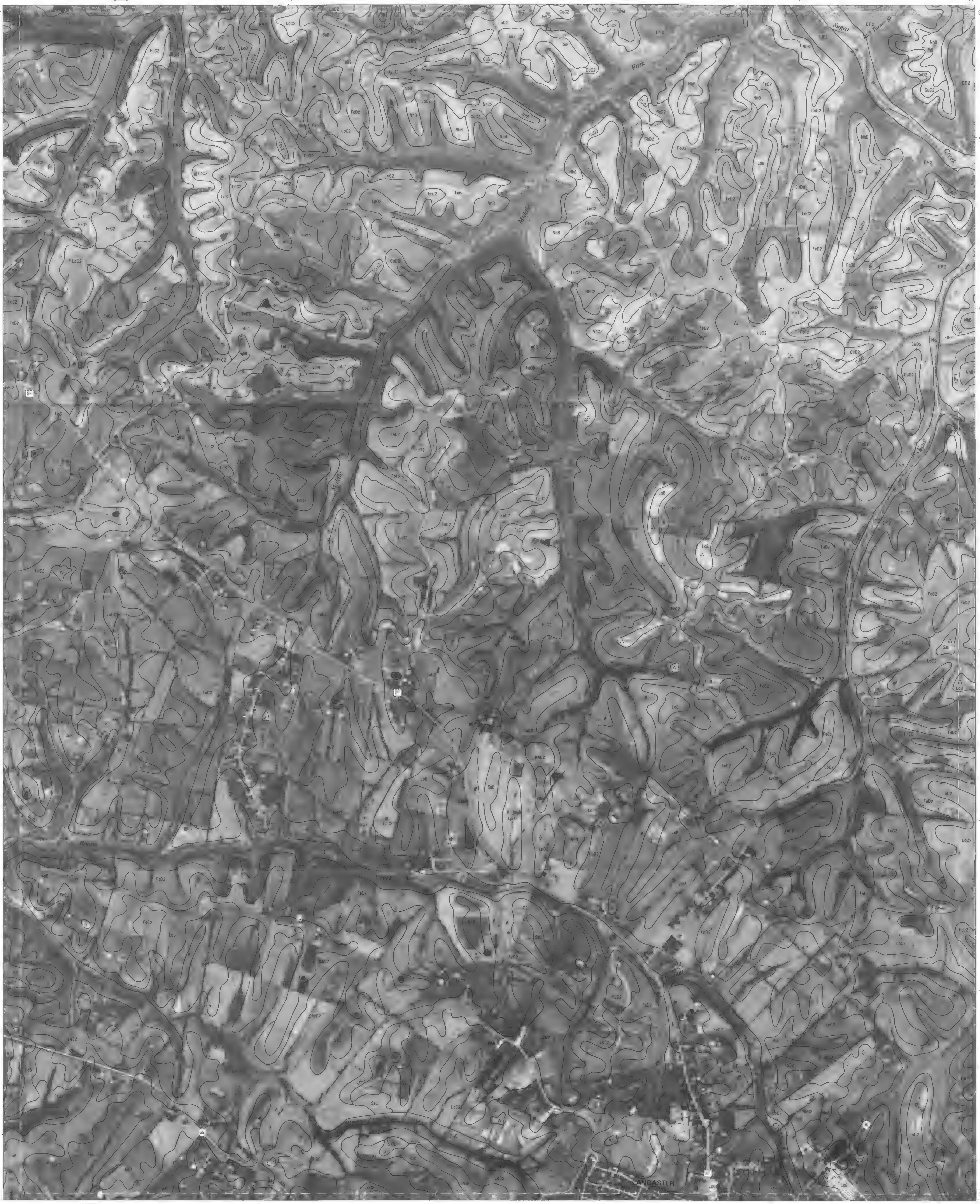
BRYANTSVILLE SE, KENTUCKY

3.75 MINUTE SERIES
SHEET NUMBER 13 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.



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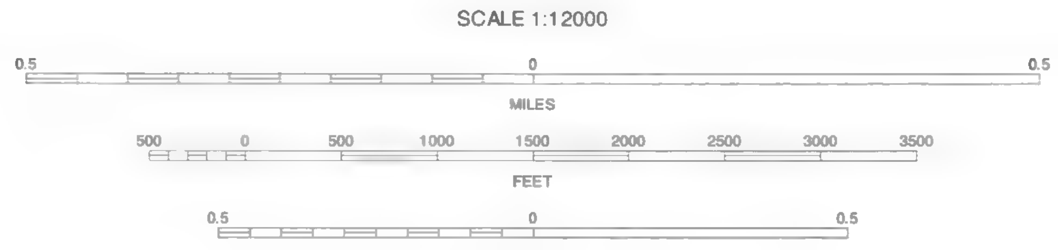
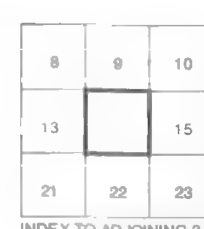
SCALE 1:12000





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BUCKEYE SW, KENTUCKY

3.75 MINUTE SERIES
SHEET NUMBER 14 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

GARRARD AND LINCOLN COUNTIES , KENTUCKY
BUCKEYE SE QUADRANGLE
SHEET NUMBER 15 OF 61

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1997-1998 aerial photography. Hydrography information was acquired from the Natural Resources Conservation Service. The hydrography layer was edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES 0.5 0 0.5

FEET 500 0 500 1000 1500 2000 2500 3000 3500

KILOMETERS 0.5 0 0.5

9 BUCKEYE NW
10 BUCKEYE NE
11 KIRKSVILLE NW
14 BUCKEYE SW
16 KIRKSVILLE SW
22 LANCASTER NW
23 LANCASTER NE
24 PAINT LICK NW

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BUCKEYE SE, KENTUCKY
3.75 MINUTE SERIES
SHEET NUMBER 15 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

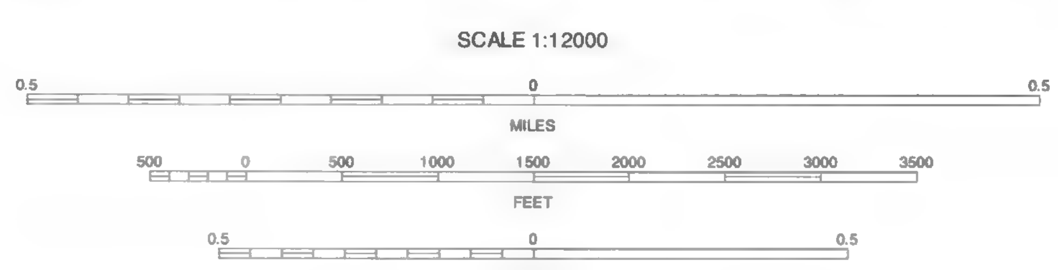
GARRARD AND LINCOLN COUNTIES , KENTUCKY
KIRKSVILLE SW QUADRANGLE
SHEET NUMBER 16 OF 61

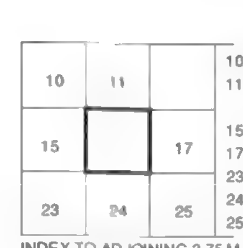
This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1997-1998 aerial photography. Hydrography information was acquired from the Natural Resources Conservation Service. The hydrography layer was edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

QUARTER QUADRANGLE LOCATION

SCALE 1:12000





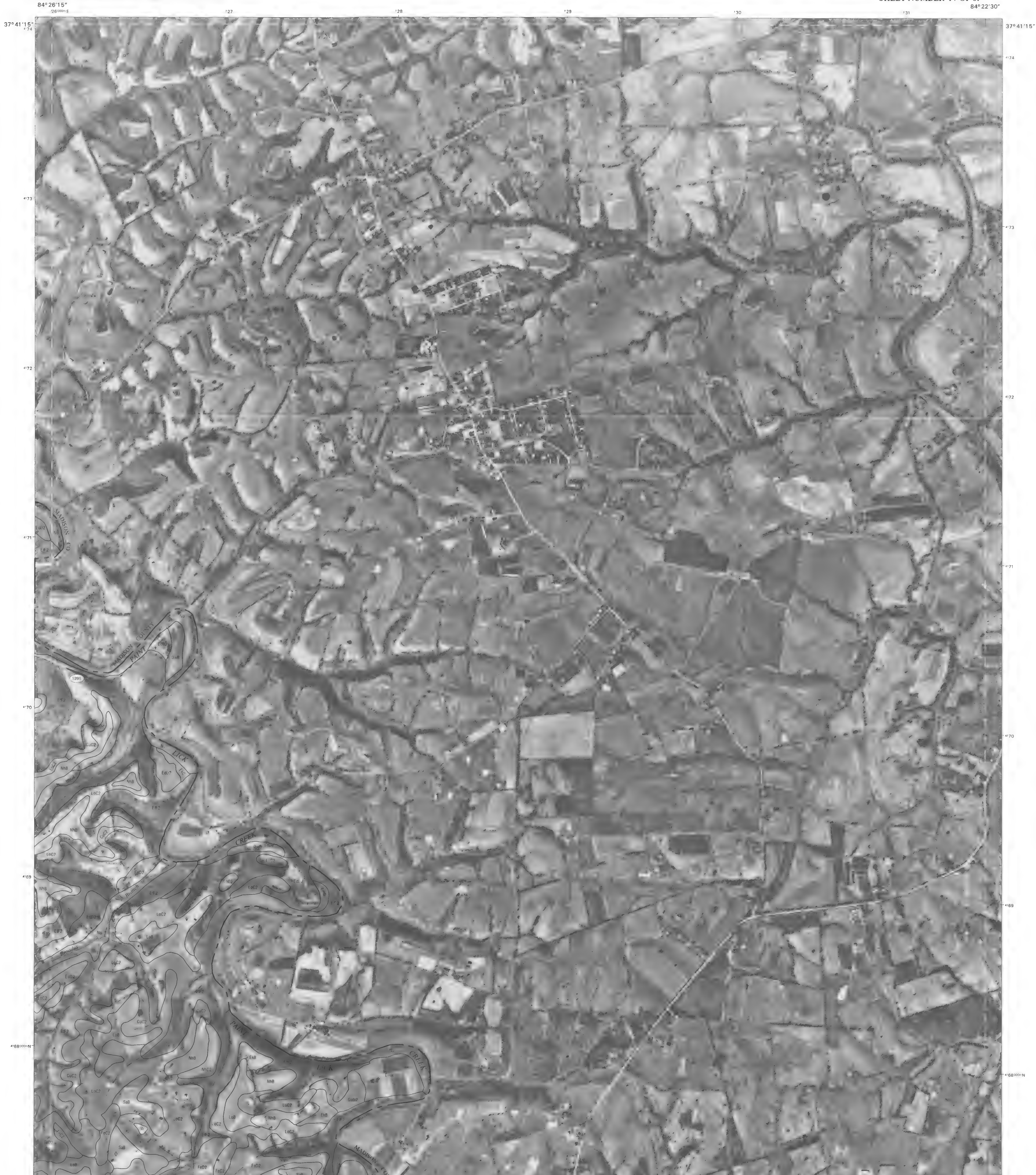
10 BUCKEYE NE
11 KIRKSVILLE NW
15 BUCKEYE SE
17 KIRKSVILLE SE
23 LANCASTER NE
24 PAINT LICK NW
25 PAINT LICK NE

INDEX TO ADJOINING 3.75 MAPS

KIRKSVILLE SW, KENTUCKY

3.75 MINUTE SERIES
SHEET NUMBER 16 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1997-1998 aerial photography. Hydrography information was acquired from the Natural Resources Conservation Service. The hydrography layer was edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5 MILES

500 0 500 1000 1500 2000 2500 3000 3500 FEET

0.5 0 0.5 KILOMETERS

11 KIRKSVILLE NW
16 KIRKSVILLE SW
24 PAINT LICK NW
25 PAINT LICK NE
26 BEREA NW

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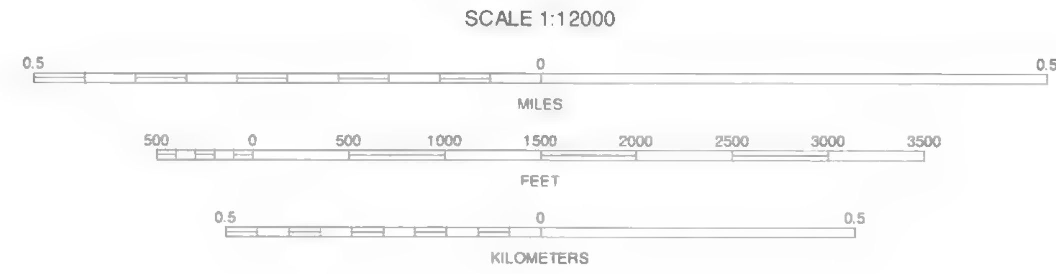
KIRKSVILLE SE, KENTUCKY
3.75 MINUTE SERIES
SHEET NUMBER 17 OF 61

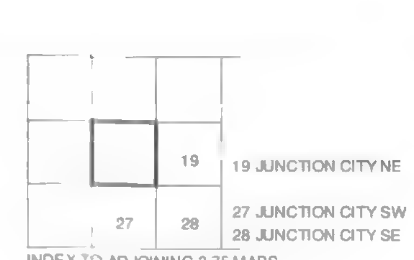
Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1997-1998 aerial photography. Hydrography information was acquired from the Natural Resources Conservation Service. The hydrography layer was edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.





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JUNCTION CITY NW, KENTUCKY
3.75 MINUTE SERIES
SHEET NUMBER 18 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

12 BRYANTSVILLE SW
18 JUNCTION CITY NW
20 STANFORD NW
27 JUNCTION CITY SW
28 JUNCTION CITY SE
29 STANFORD SW

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JUNCTION CITY NE, KENTUCKY

3.75 MINUTE SERIES
SHEET NUMBER 19 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

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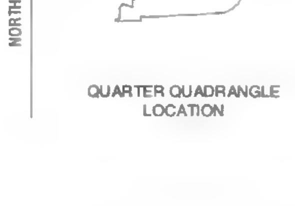
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUARTER QUADRANGLE LOCATION

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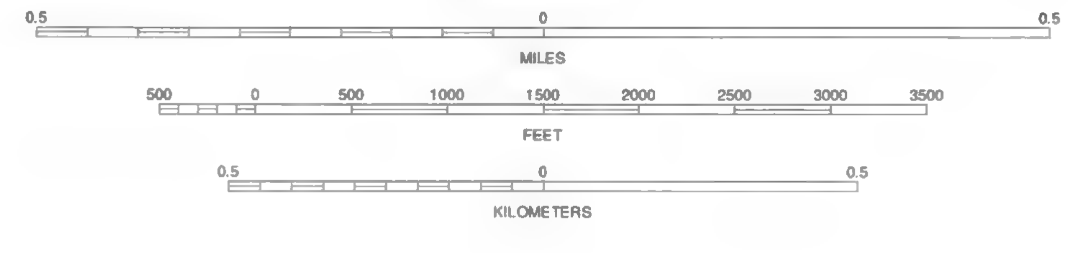

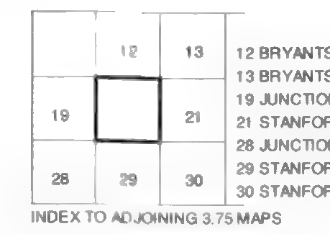

12 BRYANTSVILLE SW
13 BRYANTSVILLE SE
19 JUNCTION CITY NE
21 STANFORD NE
28 JUNCTION CITY SE
29 STANFORD SW
30 STANFORD SE

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STANFORD NW, KENTUCKY

3.75 MINUTE SERIES
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Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

'GARRARD AND LINCOLN COUNTIES', KENTUCKY
STANFORD NE QUADRANGLE
SHEET NUMBER 21 OF 61

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1997-1998 aerial photography. Hydrography information was acquired from the Natural Resources Conservation Service. The hydrography layer was edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

12	13	14
20		22
29	30	31

12 BRYANTSVILLE SW
13 BRYANTSVILLE SE
14 BUCKEYE SW
20 STANFORD NW
22 LANCASTER NW
29 STANFORD SW
30 STANFORD SE
31 LANCASTER SW

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STANFORD NE, KENTUCKY

3.75 MINUTE SERIES
SHEET NUMBER 21 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

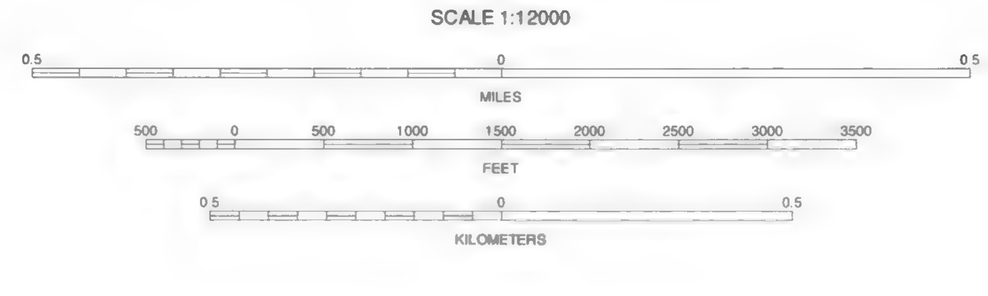
GARRARD AND LINCOLN COUNTIES , KENTUCKY
LANCASTER NW QUADRANGLE
SHEET NUMBER 22 OF 61

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1997-1998 aerial photography. Hydrography information was acquired from the Natural Resources Conservation Service. The hydrography layer was edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

QUARTER QUADRANGLE LOCATION

SCALE 1:12000



13	14	15
21		23
30	31	32

13 BRYANTSVILLE SE
14 BUCKEYE SW
15 BUCKEYE SE
21 STANFORD NE
23 LANCASTER NE
30 STANFORD SE
31 LANCASTER SW
32 LANCASTER SE

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LANCASTER NW, KENTUCKY
3.75 MINUTE SERIES
SHEET NUMBER 22 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

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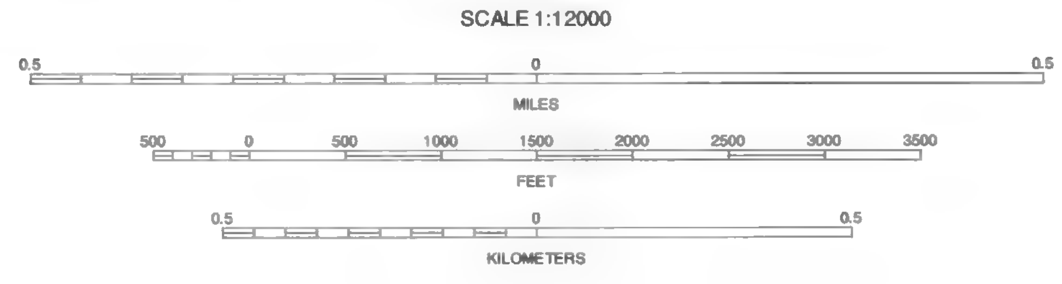

14	15	16
22		24
31	32	33

14 BUCKEYE SW
15 BUCKEYE SE
16 KIRKSVILLE SW
22 LANCASTER NW
24 PAINT LICK NW
31 LANCASTER SW
32 LANCASTER SE
33 PAINT LICK SW

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LANCASTER NE, KENTUCKY
3.75 MINUTE SERIES
SHEET NUMBER 23 OF 61

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

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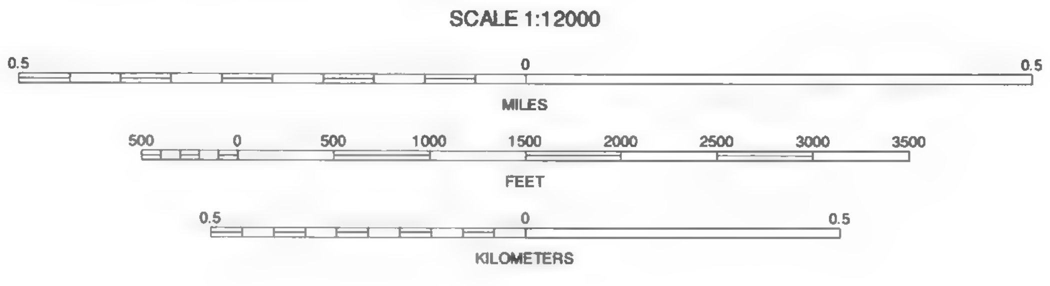

15 BUCKEYE SE
16 KIRKSVILLE SW
17 KIRKSVILLE SE
23 LANCASTER NE
25 PAINT LICK NE
32 LANCASTER SE
33 PAINT LICK SW
34 PAINT LICK SE

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PAINT LICK NW, KENTUCKY

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Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

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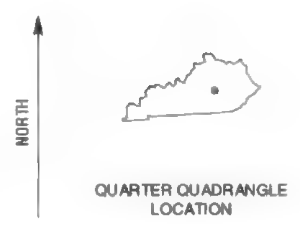
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



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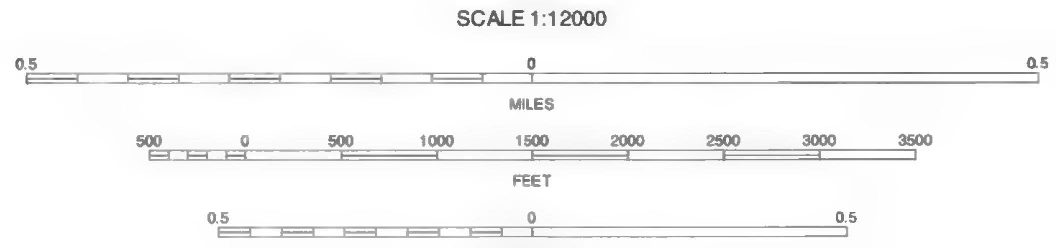

16	17		16 KIRKSVILLE SW 17 KIRKSVILLE SE
24		26	24 PAINT LICK NW 26 BEREA NW 33 PAINT LICK SW
33	34	35	34 PAINT LICK SE 35 BEREA SW

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PAINT LICK NE, KENTUCKY

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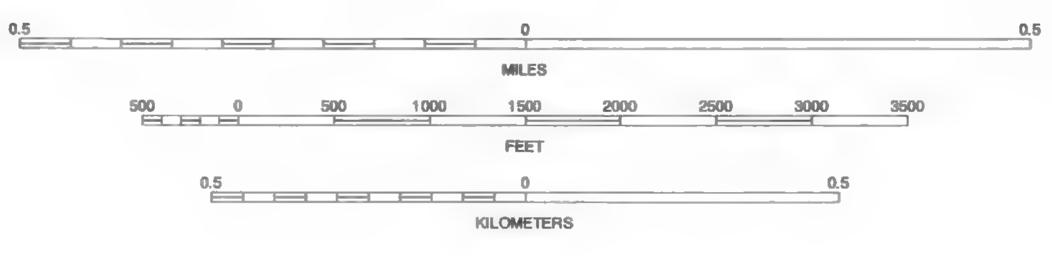
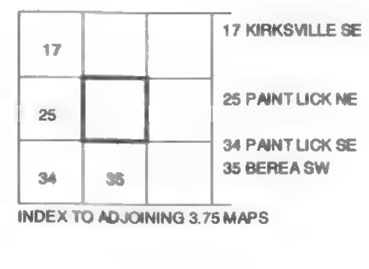
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

QUARTER QUADRANGLE LOCATION

SCALE 1:12000





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BEREA NW, KENTUCKY

3.75 MINUTE SERIES
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Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

GARRARD AND LINCOLN COUNTIES, KENTUCKY
JUNCTION CITY SW QUADRANGLE
SHEET NUMBER 27 OF 61

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

18 JUNCTION CITY NW
19 JUNCTION CITY NE
28 JUNCTION CITY SE
36 HUSTONVILLE NW
37 HUSTONVILLE NE

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JUNCTION CITY SW, KENTUCKY

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UNITED STATES
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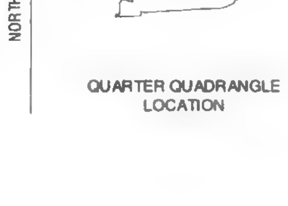

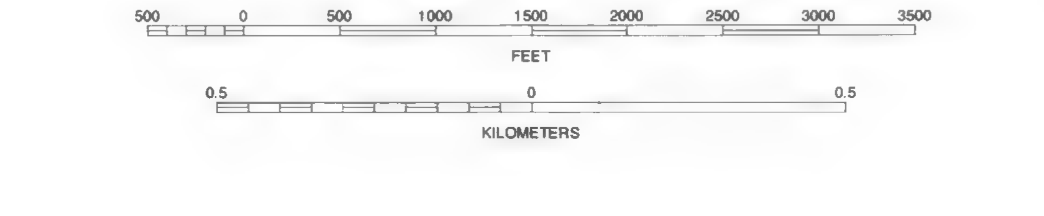

18	19	20
27		29
36	37	38

18 JUNCTION CITY NW
19 JUNCTION CITY NE
20 STANFORD NW
27 JUNCTION CITY SW
29 STANFORD SW
36 HUSTONVILLE NW
37 HUSTONVILLE NE
38 HALLS GAP NW

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JUNCTION CITY SE, KENTUCKY

3.75 MINUTE SERIES
SHEET NUMBER 28 OF 61

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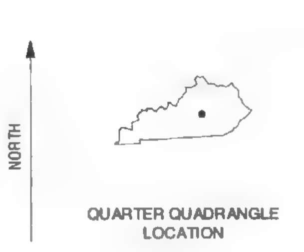

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 — 0 — 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 — 0 — 0.5
KILOMETERS

19	20	21
28		30
37	38	39

19 JUNCTION CITY NE
20 STANFORD NW
21 STANFORD NE
28 JUNCTION CITY SE
30 STANFORD SE
37 HUSTONVILLE NE
38 HALLS GAP NW
39 HALLS GAP NE

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STANFORD SW, KENTUCKY
3.75 MINUTE SERIES
SHEET NUMBER 29 OF 61

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

GARRARD AND LINCOLN COUNTIES', KENTUCKY
STANFORD SE QUADRANGLE
SHEET NUMBER 30 OF 61

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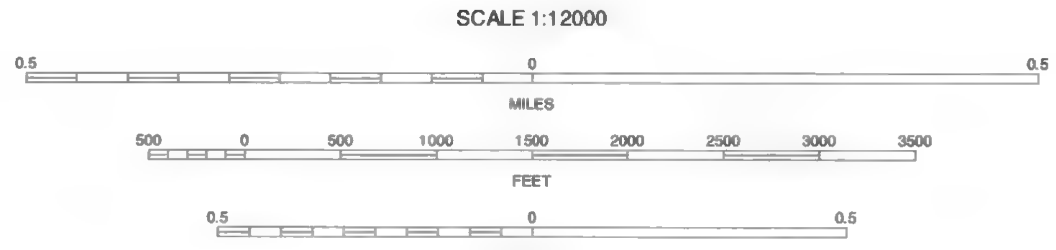
QUARTER QUADRANGLE LOCATION



20	21	22
29		31
38	39	40

20 STANFORD NW
21 STANFORD NE
22 LANCASTER NW
29 STANFORD SW
31 LANCASTER SW
38 HALLS GAP NW
39 HALLS GAP NE
40 CRAB ORCHARD NW

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STANFORD SE, KENTUCKY

3.75 MINUTE SERIES
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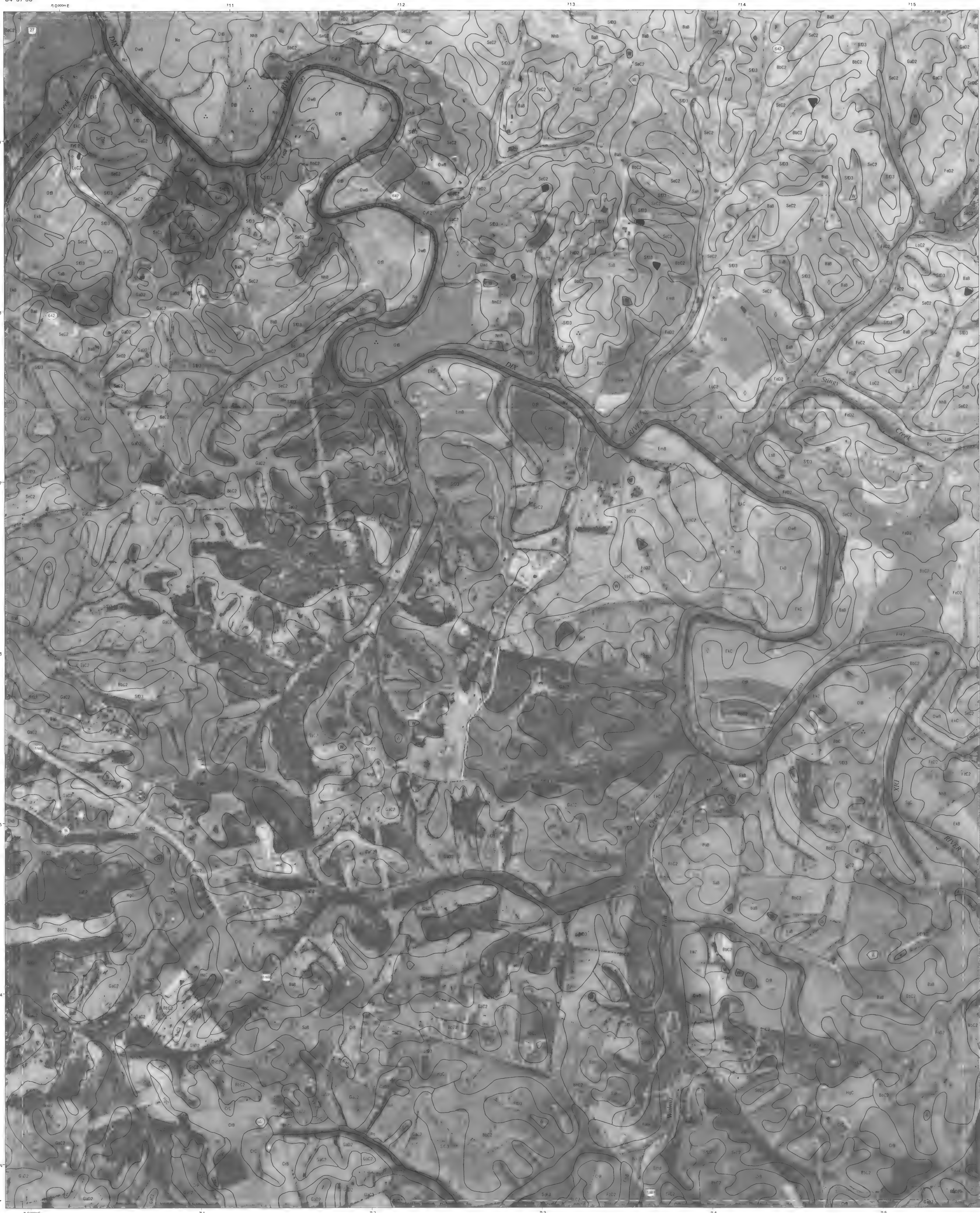
Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

'GARRARD AND LINCOLN COUNTIES , KENTUCKY
LANCASTER SW QUADRANGLE
SHEET NUMBER 31 OF 61



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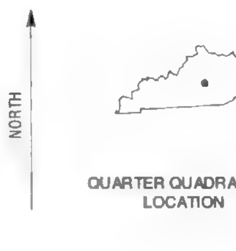
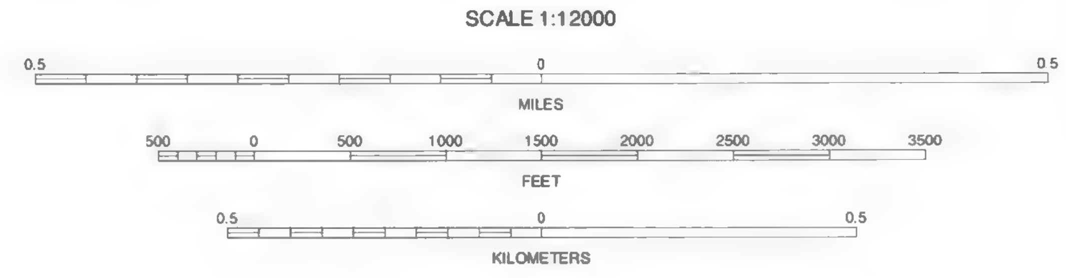


QUARTER QUADRANGLE LOCATION

SCALE 1:12000



21	22	23
30		32
39	40	41

21 STANFORD NE
22 LANCASTER NW
23 LANCASTER NE
30 STANFORD SE
32 LANCASTER SE
39 HALLS GAP NE
40 CRAB ORCHARD NW
41 CRAB ORCHARD NE

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LANCASTER SW, KENTUCKY
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Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
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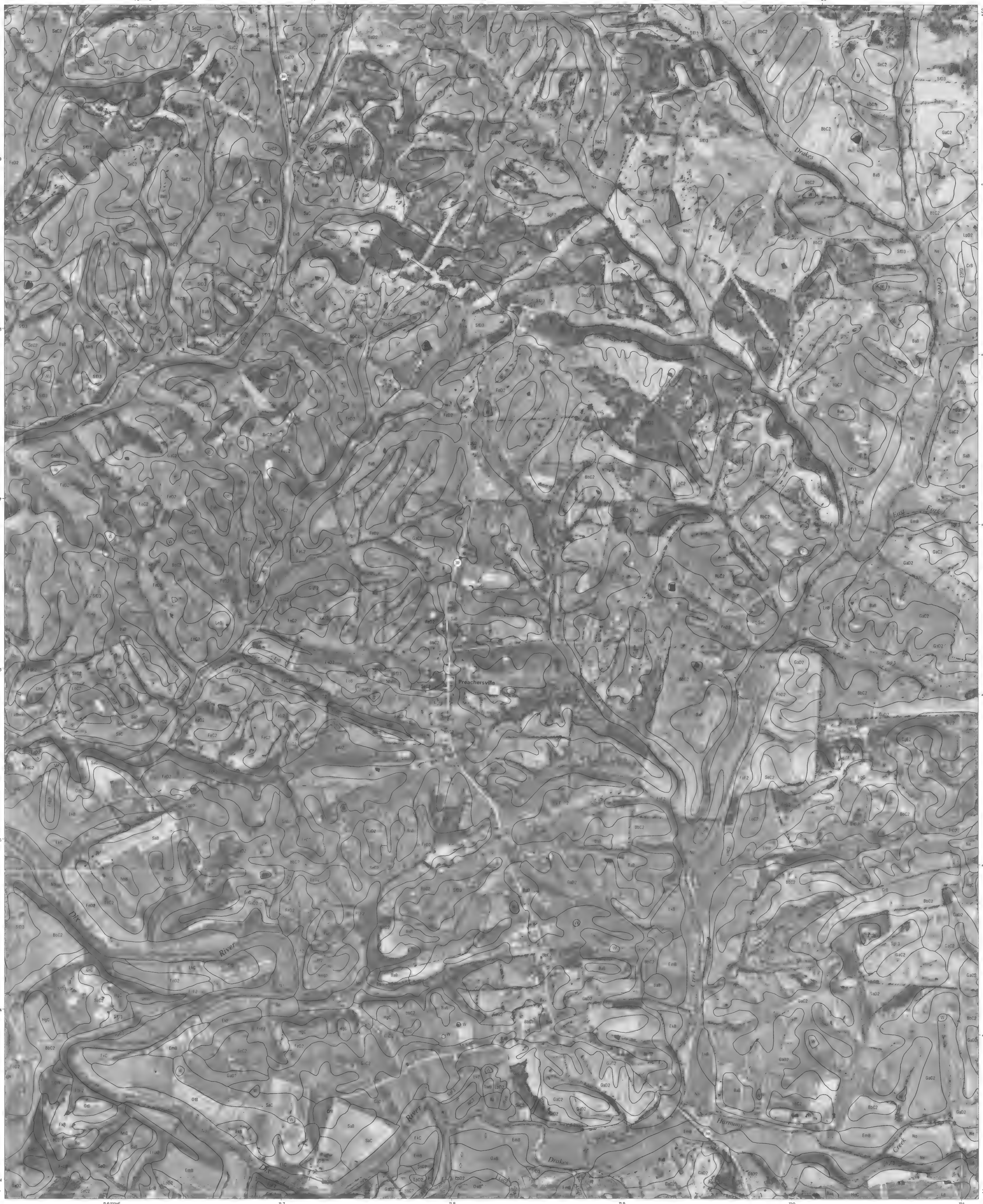
GARRARD AND LINCOLN COUNTIES , KENTUCKY
LANCASTER SE QUADRANGLE
SHEET NUMBER 32 OF 61

84° 33′45″ 716000mE 717 718 719 720 84° 30′00″

37° 33′45″ 37° 33′45″



37° 30′00″ 37° 30′00″

84° 33′45″ 716000mE 717 718 719 720 721 84° 30′00″

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

22	23	24
31		33
40	41	42

22 LANCASTER NW
23 LANCASTER NE
24 PAINT LICK NW
31 LANCASTER SW
33 PAINT LICK SW
40 CRAB ORCHARD NW
41 CRAB ORCHARD NE
42 BRODHEAD NW

INDEX TO ADJOINING 3.75 MAPS

LANCASTER SE, KENTUCKY
3.75 MINUTE SERIES
SHEET NUMBER 32 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

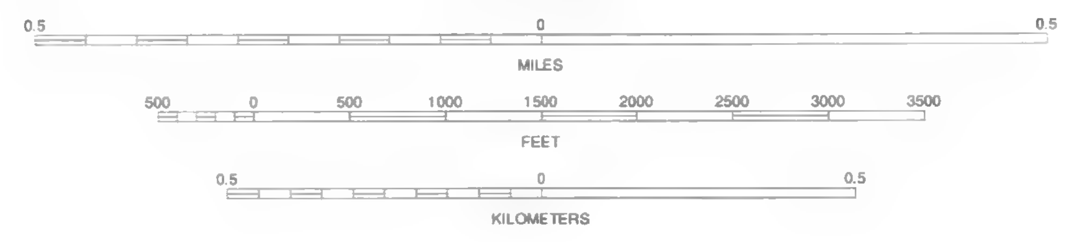
GARRARD AND LINCOLN COUNTIES , KENTUCKY
PAINT LICK SW QUADRANGLE
SHEET NUMBER 33 OF 61

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1997-1998 aerial photography. Hydrography information was acquired from the Natural Resources Conservation Service. The hydrography layer was edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

QUARTER QUADRANGLE LOCATION

SCALE 1:12000



23 LANCASTER NE
24 PAINT LICK NW
25 PAINT LICK NE
32 LANCASTER SE
34 PAINT LICK SE
41 CRAB ORCHARD NE
42 BRODHEAD NW
43 BRODHEAD NE

INDEX TO ADJOINING 3.75 MAPS

PAINT LICK SW, KENTUCKY

3.75 MINUTE SERIES
SHEET NUMBER 33 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

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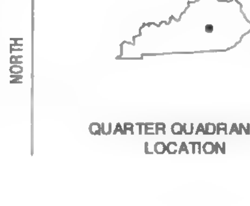
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



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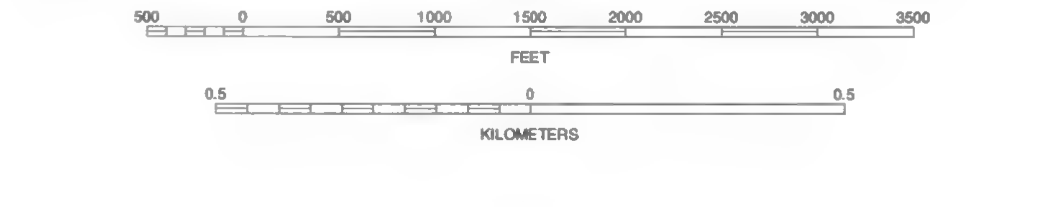
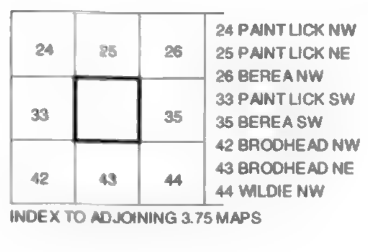
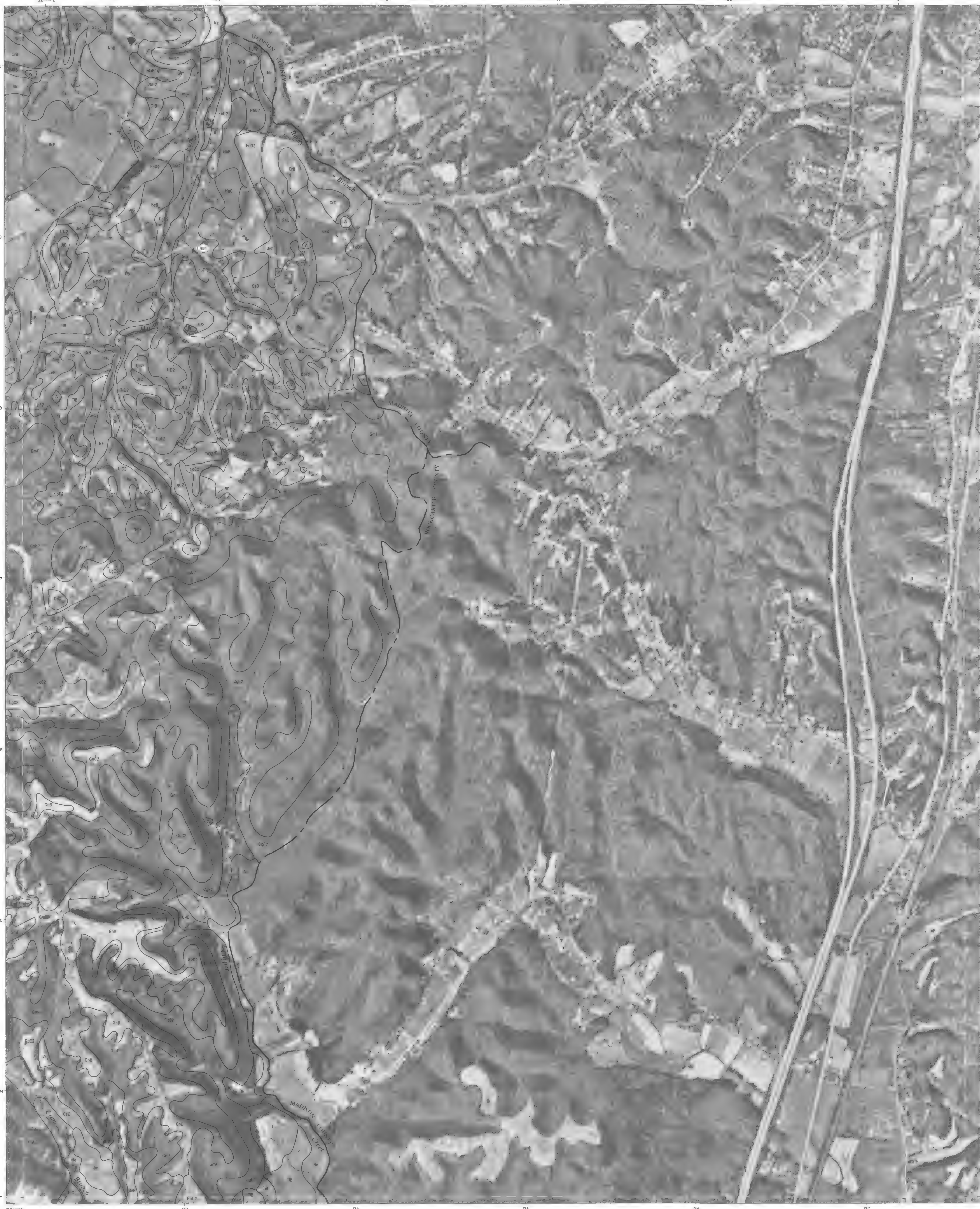




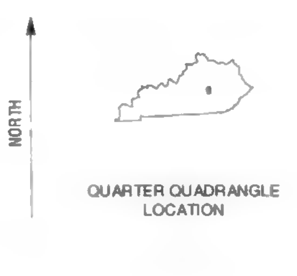
PAINT LICK SE, KENTUCKY
3.75 MINUTE SERIES
SHEET NUMBER 34 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

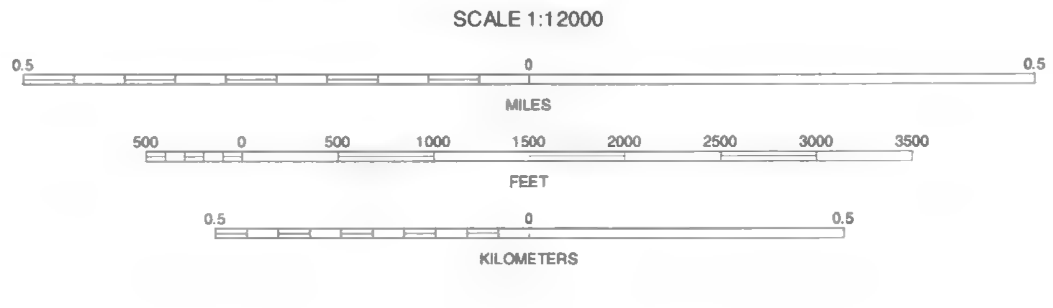


This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1997-1998 aerial photography. Hydrography information was acquired from the Natural Resources Conservation Service. The hydrography layer was edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



SCALE 1:12000



25 PAINT LICK NE
26 BEREA NW
34 PAINT LICK SE
43 BRODHEAD NE
44 WILDIE NW

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BEREA SW, KENTUCKY

3.75 MINUTE SERIES
SHEET NUMBER 35 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
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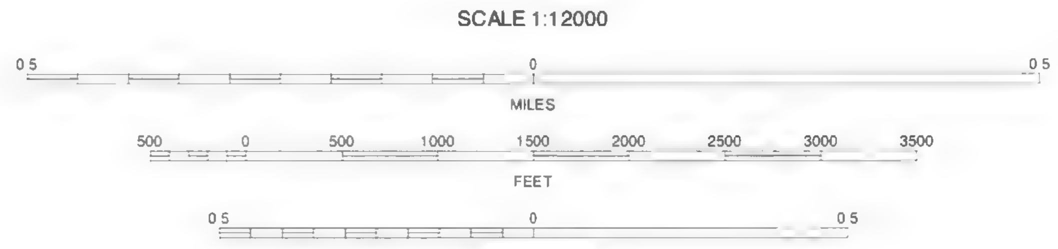
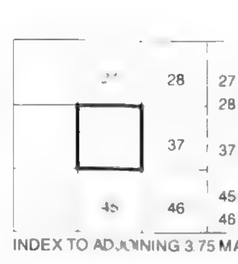
GARRARD AND LINCOLN COUNTIES , KENTUCKY
HUSTONVILLE NW QUADRANGLE
SHEET NUMBER 36 OF 61

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1997-1998 aerial photography. Hydrography information was acquired from the Natural Resources Conservation Service. The hydrography layer was edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.





HUSTONVILLE NW, KENTUCKY
3.75 MINUTE SERIES
SHEET NUMBER 36 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1997-1998 aerial photography. Hydrography information was acquired from the Natural Resources Conservation Service. The hydrography layer was edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

27	28	29
36		38
45	46	47

27 JUNCTION CITY SW
28 JUNCTION CITY SE
29 STANFORD SW
36 HUSTONVILLE NW
38 HALLS GAP NW
45 HUSTONVILLE SW
46 HUSTONVILLE SE
47 HALLS GAP SW

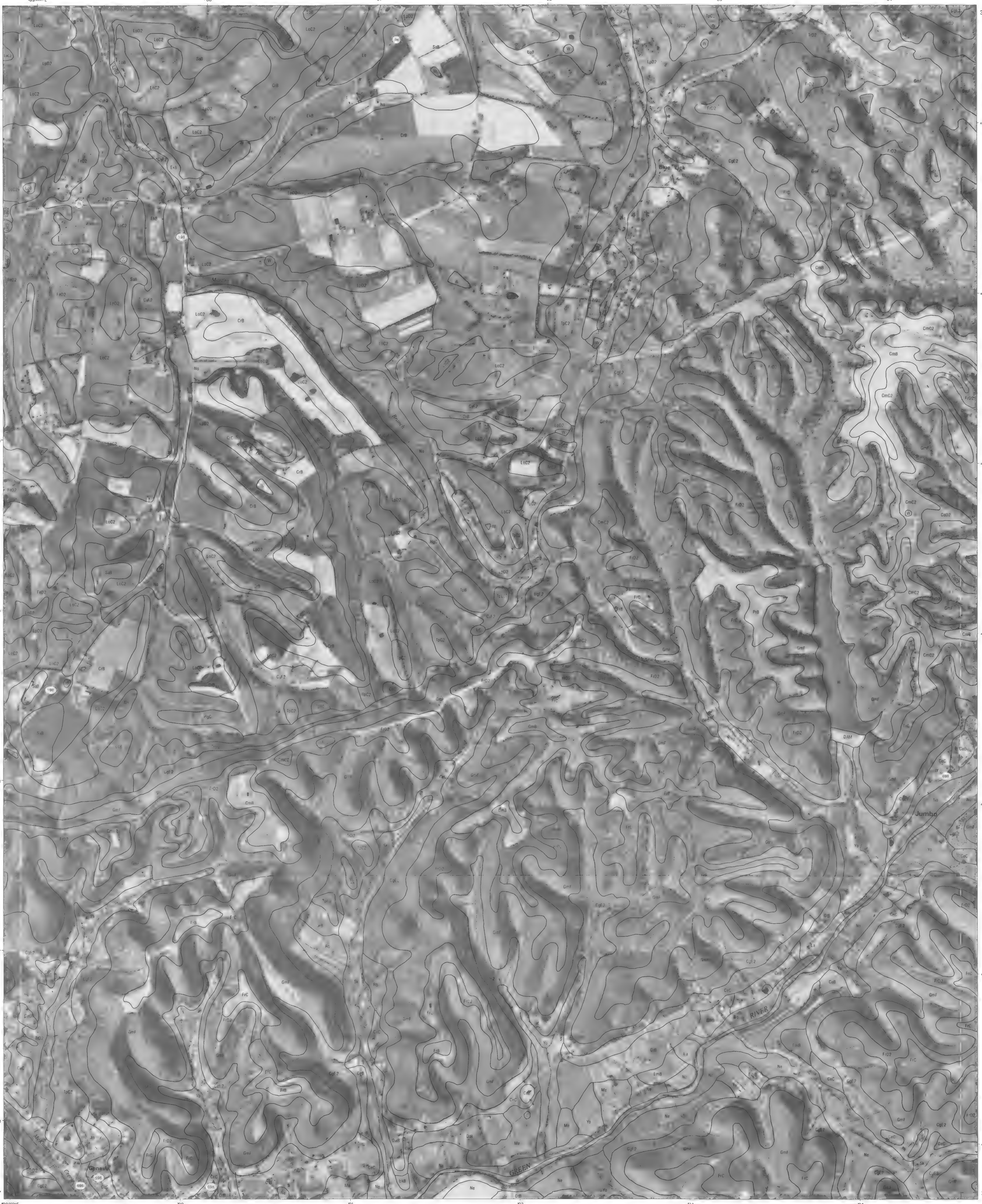
INDEX TO ADJOINING 3.75 MAPS

HUSTONVILLE NE, KENTUCKY

3.75 MINUTE SERIES
SHEET NUMBER 37 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

84° 45'00" 84° 41'15"
37° 30'00" 37° 30'00"



37° 26'15" 37° 26'15"
84° 45'00" 84° 41'15"

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

28 JUNCTION CITY SE
29 STANFORD SW
30 STANFORD SE
37 HUSTONVILLE NE
39 HALLS GAP NE
46 HUSTONVILLE SE
47 HALLS GAP SW
48 HALLS GAP SE

INDEX TO ADJOINING 3.75 MAPS

HALLS GAP NW, KENTUCKY

3.75 MINUTE SERIES
SHEET NUMBER 38 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

GARRARD AND LINCOLN COUNTIES , KENTUCKY
HALLS GAP NE QUADRANGLE
SHEET NUMBER 39 OF 61

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1997-1998 aerial photography. Hydrography information was acquired from the Natural Resources Conservation Service. The hydrography layer was edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

29	30	31
38		40
47	48	49

29 STANFORD SW
30 STANFORD SE
31 LANCASTER SW
38 HALLS GAP NW
40 CRAB ORCHARD NW
47 HALLS GAP SW
48 HALLS GAP SE
49 CRAB ORCHARD SW

INDEX TO ADJOINING 3.75 MAPS

HALLS GAP NE, KENTUCKY

3.75 MINUTE SERIES
SHEET NUMBER 39 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

GARRARD AND LINCOLN COUNTIES , KENTUCKY
CRAB ORCHARD NW QUADRANGLE
SHEET NUMBER 40 OF 61

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1997-1998 aerial photography. Hydrography information was acquired from the Natural Resources Conservation Service. The hydrography layer was edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

30	31	32
39		41
48	49	50

30 STANFORD SE
31 LANCASTER SW
32 LANCASTER SE
39 HALLS GAP NE
41 CRAB ORCHARD NE
48 HALLS GAP SE
49 CRAB ORCHARD SW
50 CRAB ORCHARD SE

INDEX TO ADJOINING 3.75 MAPS

CRAB ORCHARD NW, KENTUCKY
3.75 MINUTE SERIES
SHEET NUMBER 40 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES: 0.5 0 0.5

FEET: 500 0 500 1000 1500 2000 2500 3000 3500

KILOMETERS: 0.5 0 0.5

31	32	33
40		42
49	50	51

31 LANCASTER SW
32 LANCASTER SE
33 PAINT LICK SW
40 CRAB ORCHARD NW
42 BRODHEAD NW
49 CRAB ORCHARD SW
50 CRAB ORCHARD SE
51 BRODHEAD SW

INDEX TO ADJOINING 3.75 MAPS

CRAB ORCHARD NE, KENTUCKY

3.75 MINUTE SERIES
SHEET NUMBER 41 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

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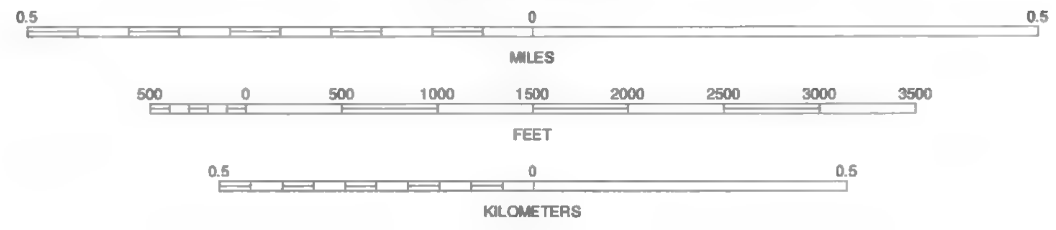
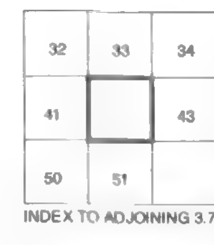
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:12000





32 LANCASTER SE
33 PAINT LICK SW
34 PAINT LICK SE
41 CRAB ORCHARD NE
43 BRODHEAD NE
50 CRAB ORCHARD SE
51 BRODHEAD SW

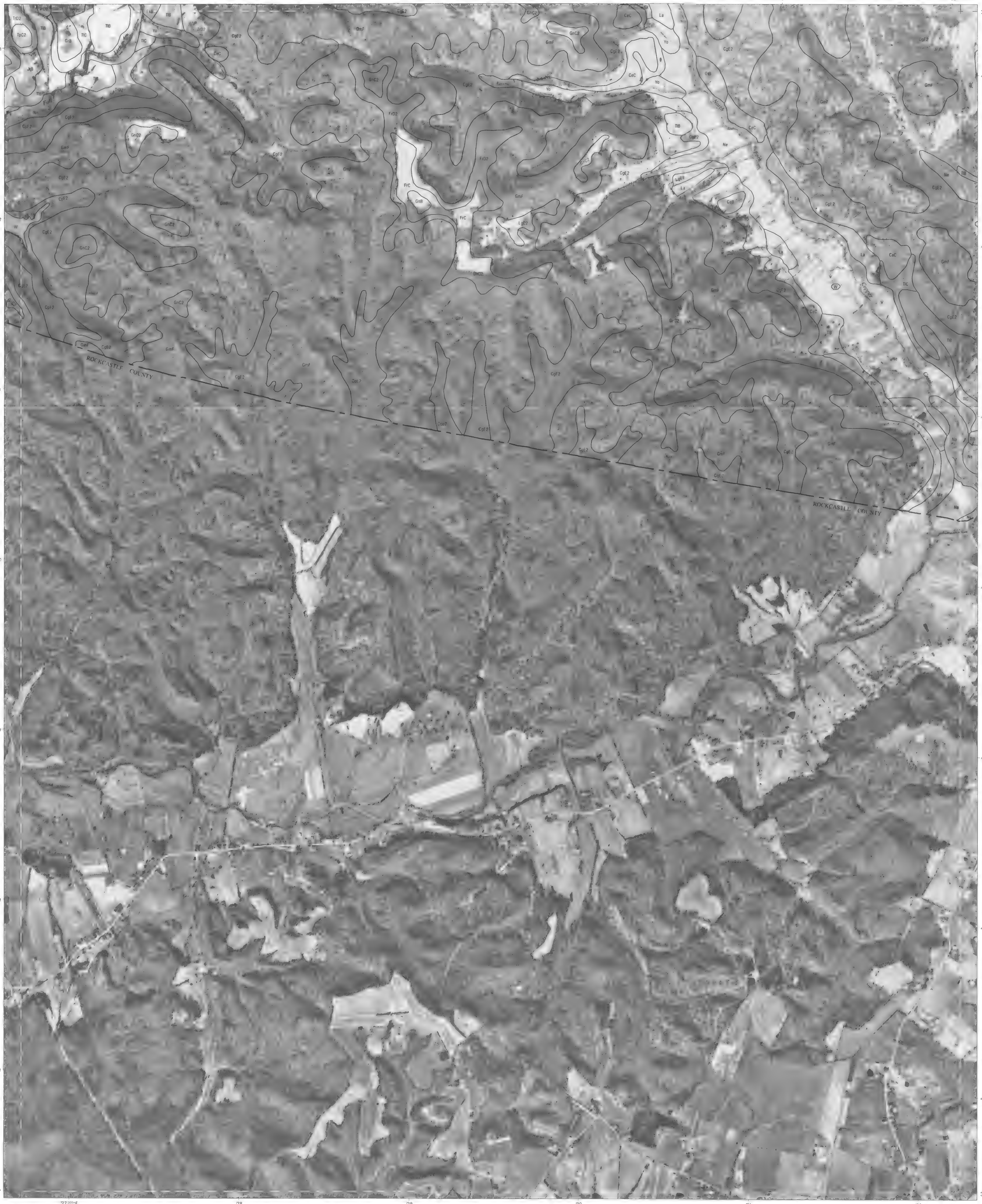
INDEX TO ADJOINING 3.75 MAPS

BRODHEAD NW, KENTUCKY
3.75 MINUTE SERIES
SHEET NUMBER 42 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

GARRARD AND LINCOLN COUNTIES , KENTUCKY
BRODHEAD NE QUADRANGLE
SHEET NUMBER 43 OF 61



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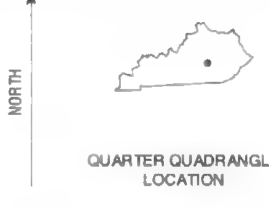
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 — 0 — 0.5
MILES

500 — 0 — 500 — 1000 — 1500 — 2000 — 2500 — 3000 — 3500
FEET

0.5 — 0 — 0.5
KILOMETERS

33 PAINT LICK SW
34 PAINT LICK SE
35 BEREA SW
42 BRODHEAD NW
44 WILDIE NW
51 BRODHEAD SW

INDEX TO ADJOINING 3.75 MAPS

BRODHEAD NE, KENTUCKY

3.75 MINUTE SERIES
SHEET NUMBER 43 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
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84° 22'30"   84°18'45"

37° 30'00"   37°30'00"

37°26'15"   37°26'15"

84° 22'30"   84°18'45"

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

34	35	
43	■	

34 PAINT LICK SE
35 BEREA SW
43 BRODHEAD NE

INDEX TO ADJOINING 3.75 MAPS

WILDIE NW, KENTUCKY

3.75 MINUTE SERIES
SHEET NUMBER 44 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
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84° 52' 30"　　84° 48' 45"

37° 26' 15"

37° 22' 30"

84° 52' 30"　　84° 48' 45"

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5　0　0.5
MILES

500　0　500　1000　1500　2000　2500　3000　3500
FEET

0.5　0　0.5
KILOMETERS

	36	37
	■	46
		52

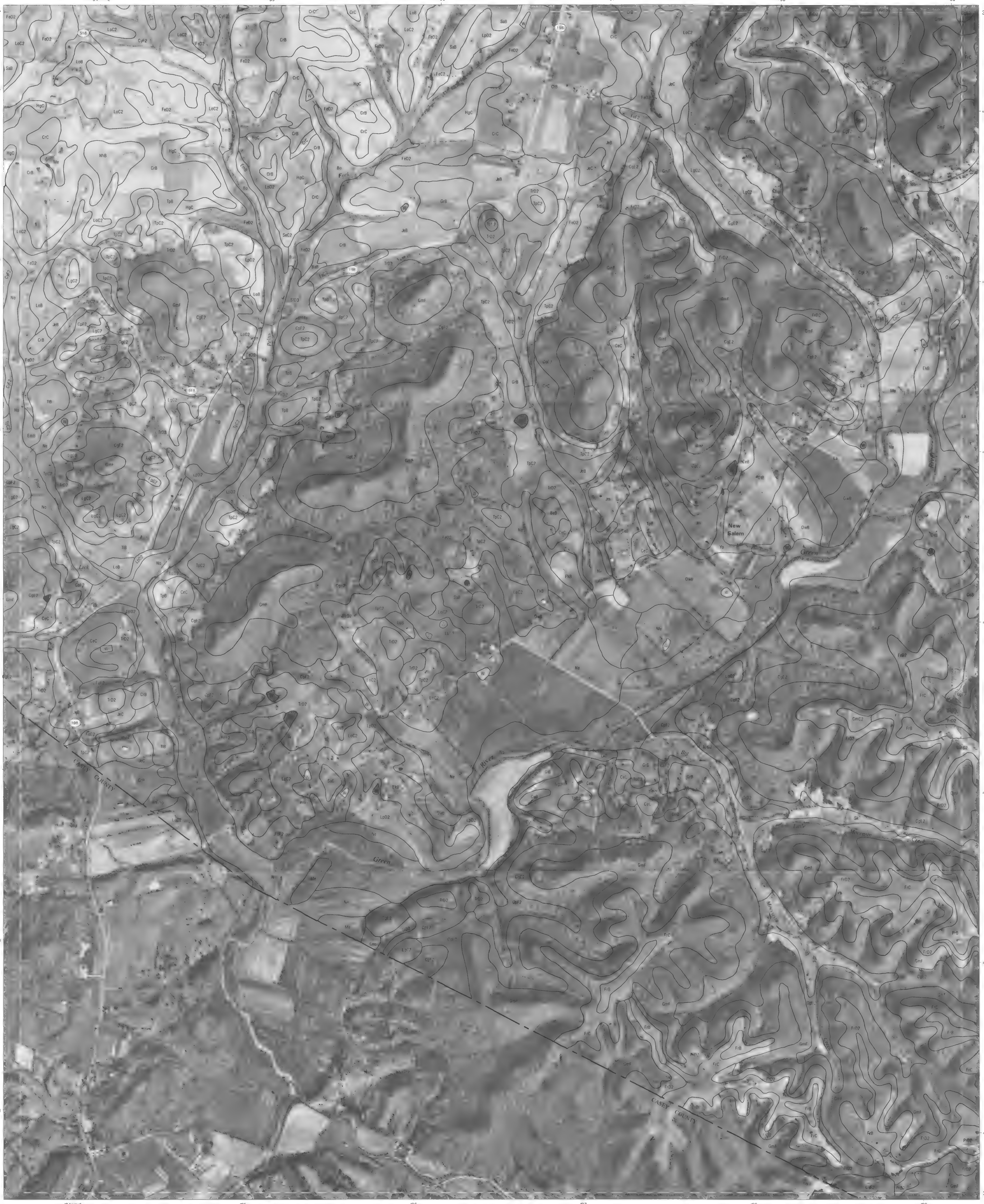
36 HUSTONVILLE NW
37 HUSTONVILLE NE
46 HUSTONVILLE SE
52 YOSEMITE NE

INDEX TO ADJOINING 3.75 MAPS

HUSTONVILLE SW, KENTUCKY

3.75 MINUTE SERIES
SHEET NUMBER 45 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.



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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

36 HUSTONVILLE NW
37 HUSTONVILLE NE
38 HALLS GAP NW
45 HUSTONVILLE SW
47 HALLS GAP SW
52 YOSEMITE NE
53 EUBANK NW

INDEX TO ADJOINING 3.75 MAPS

HUSTONVILLE SE, KENTUCKY

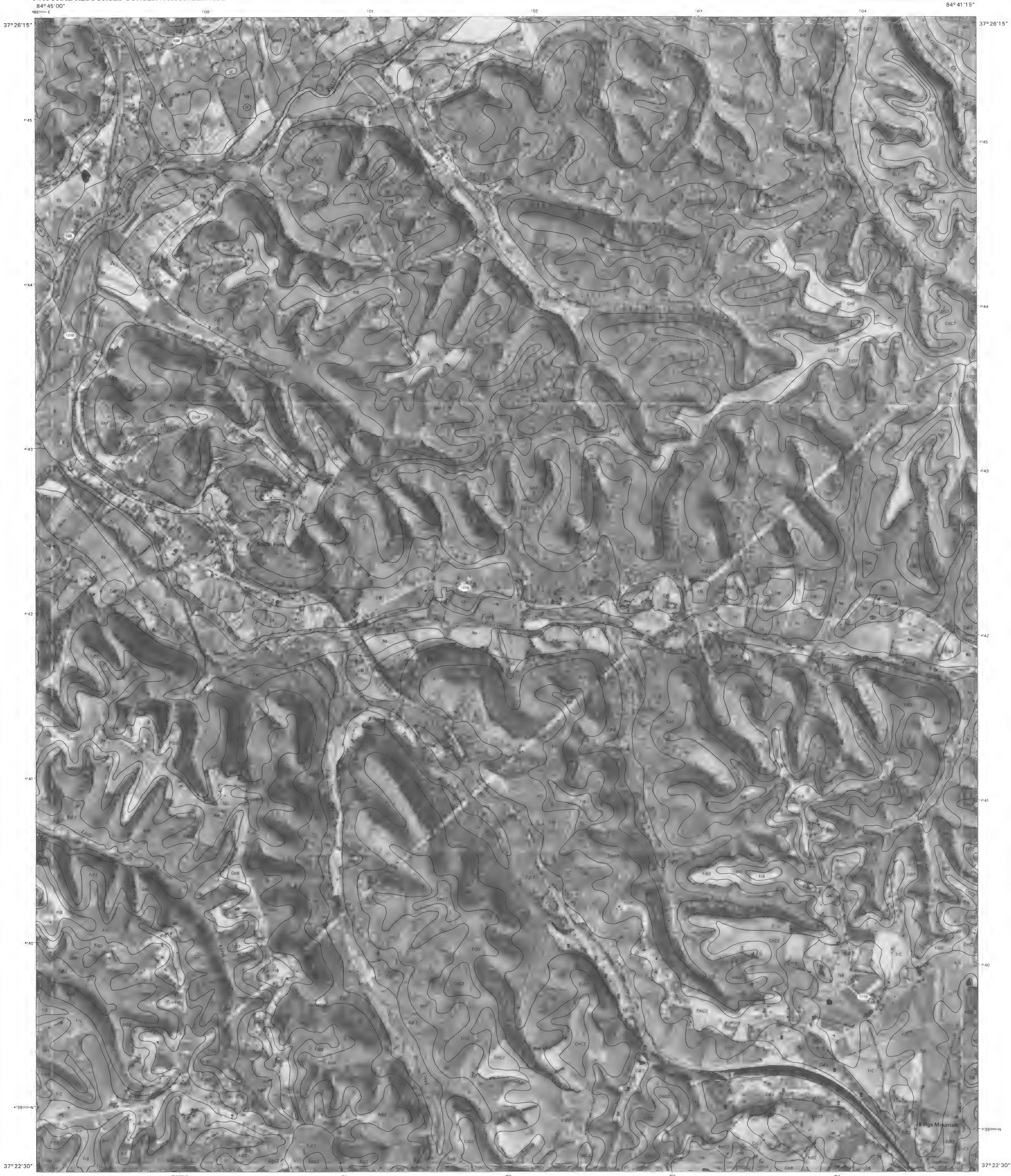
3.75 MINUTE SERIES

SHEET NUMBER 46 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

GARRARD AND LINCOLN COUNTIES, KENTUCKY
HALLS GAP SW QUADRANGLE
SHEET NUMBER 47 OF 61



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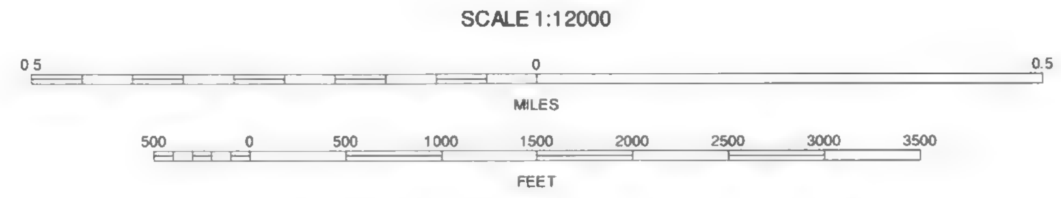
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

QUARTER QUADRANGLE LOCATION

SCALE 1:12000



37	38	39
46		48
52	53	54

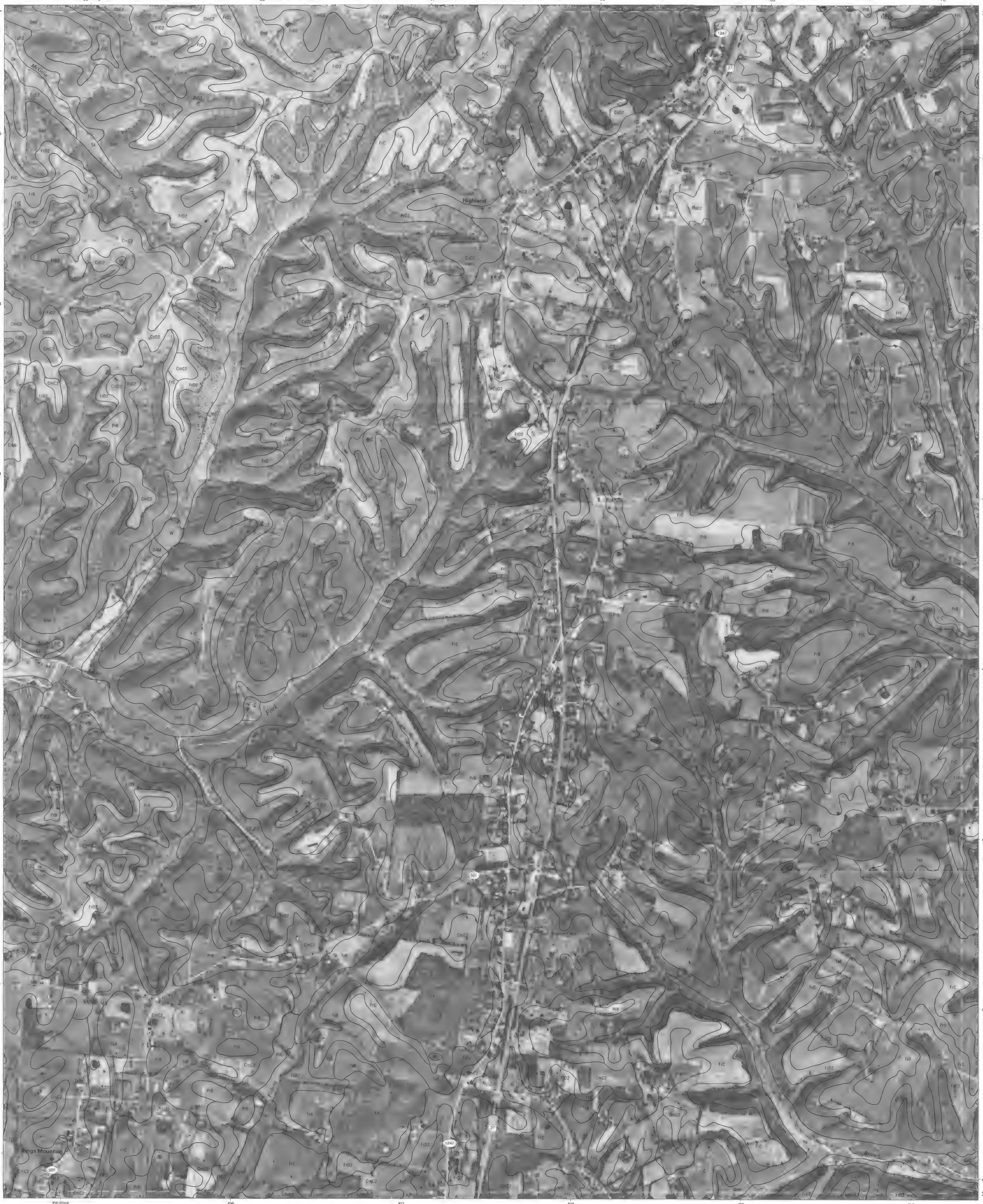
37 HUSTONVILLE NE
38 HALLS GAP NW
39 HALLS GAP NE
46 HUSTONVILLE SE
48 HALLS GAP SE
52 YOSEMITE NE
53 EUBANK NW
54 EUBANK NE

INDEX TO ADJOINING 3.75 MAPS

HALLS GAP SW, KENTUCKY
3.75 MINUTE SERIES
SHEET NUMBER 47 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE



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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

38	39	40
47		49
53	54	55

38 HALLS GAP NW
39 HALLS GAP NE
40 CRAB ORCHARD NW
47 HALLS GAP SW
49 CRAB ORCHARD SW
53 EUBANK NW
54 EUBANK NE
55 WOODSTOCK NW

INDEX TO ADJOINING 3.75 MAPS

HALLS GAP SE, KENTUCKY

3.75 MINUTE SERIES
SHEET NUMBER 48 OF 61

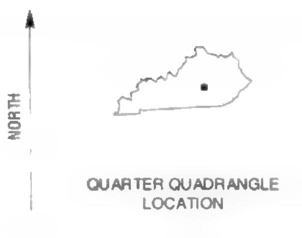
Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

GARRARD AND LINCOLN COUNTIES, KENTUCKY
CRAB ORCHARD SW QUADRANGLE
SHEET NUMBER 49 OF 61

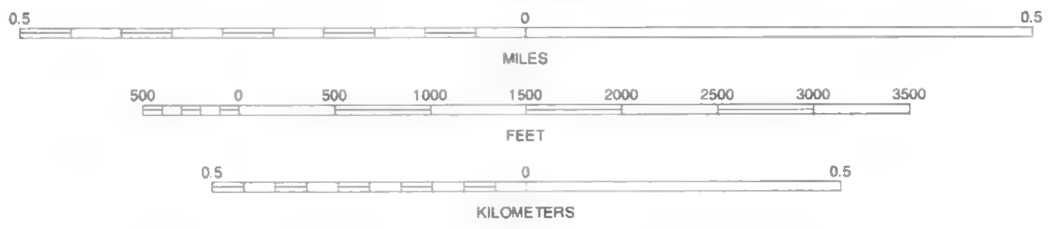
This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1997-1998 aerial photography. Hydrography information was acquired from the Natural Resources Conservation Service. The hydrography layer was edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

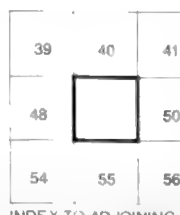
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUARTER QUADRANGLE LOCATION

SCALE 1:12000





39 HALLS GAP NE
40 CRAB ORCHARD NW
41 CRAB ORCHARD NE
48 HALLS GAP SE
50 CRAB ORCHARD SE
54 EUBANK NE
55 WOODSTOCK NW
56 WOODSTOCK NE

INDEX TO ADJOINING 3.75 MAPS

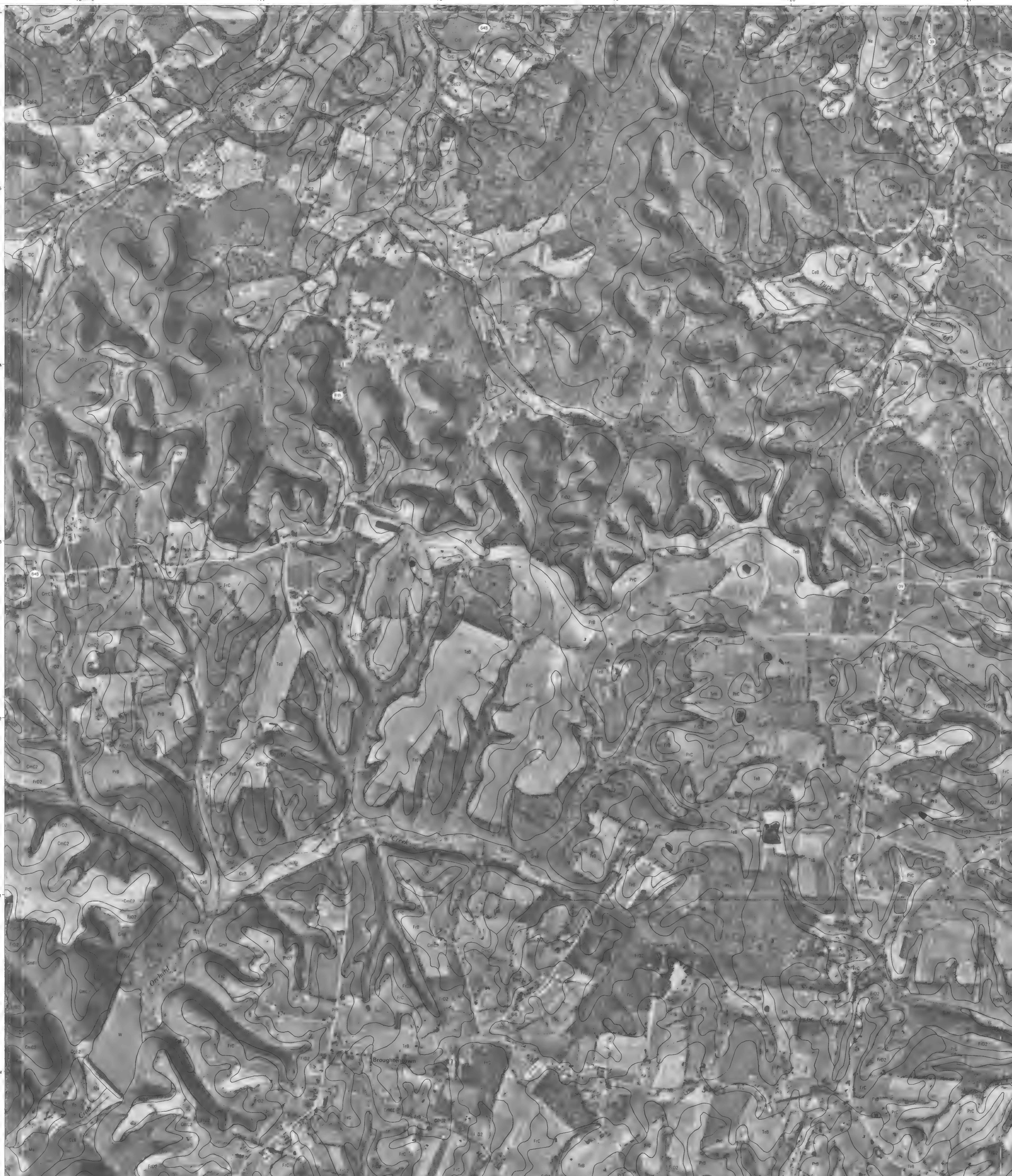
CRAB ORCHARD SW, KENTUCKY

3.75 MINUTE SERIES
SHEET NUMBER 49 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

84° 33′45″ 84° 30′00″

37° 26′15″ 37° 26′15″



37° 22′30″ 37° 22′30″

84° 33′45″ 84° 30′00″

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

40	41	42
49		51
55	56	57

40 CRAB ORCHARD NW
41 CRAB ORCHARD NE
42 BRODHEAD NW
49 CRAB ORCHARD SW
51 BRODHEAD SW
55 WOODSTOCK NW
56 WOODSTOCK NE
57 MARETBURG NW

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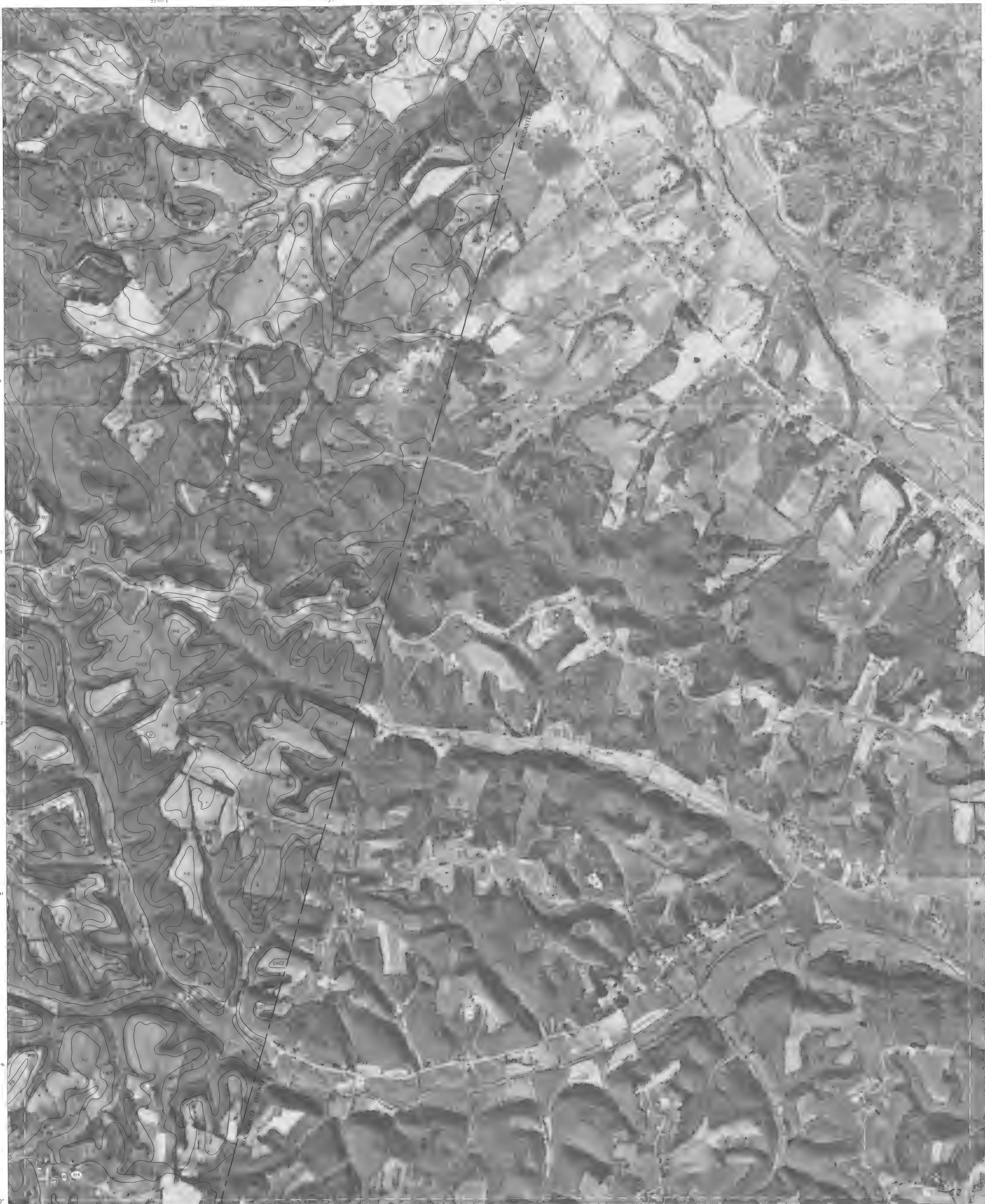
CRAB ORCHARD SE, KENTUCKY

3.75 MINUTE SERIES
SHEET NUMBER 50 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

GARRARD AND LINCOLN COUNTIES, KENTUCKY
BRODHEAD SW QUADRANGLE
SHEET NUMBER 51 OF 61



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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

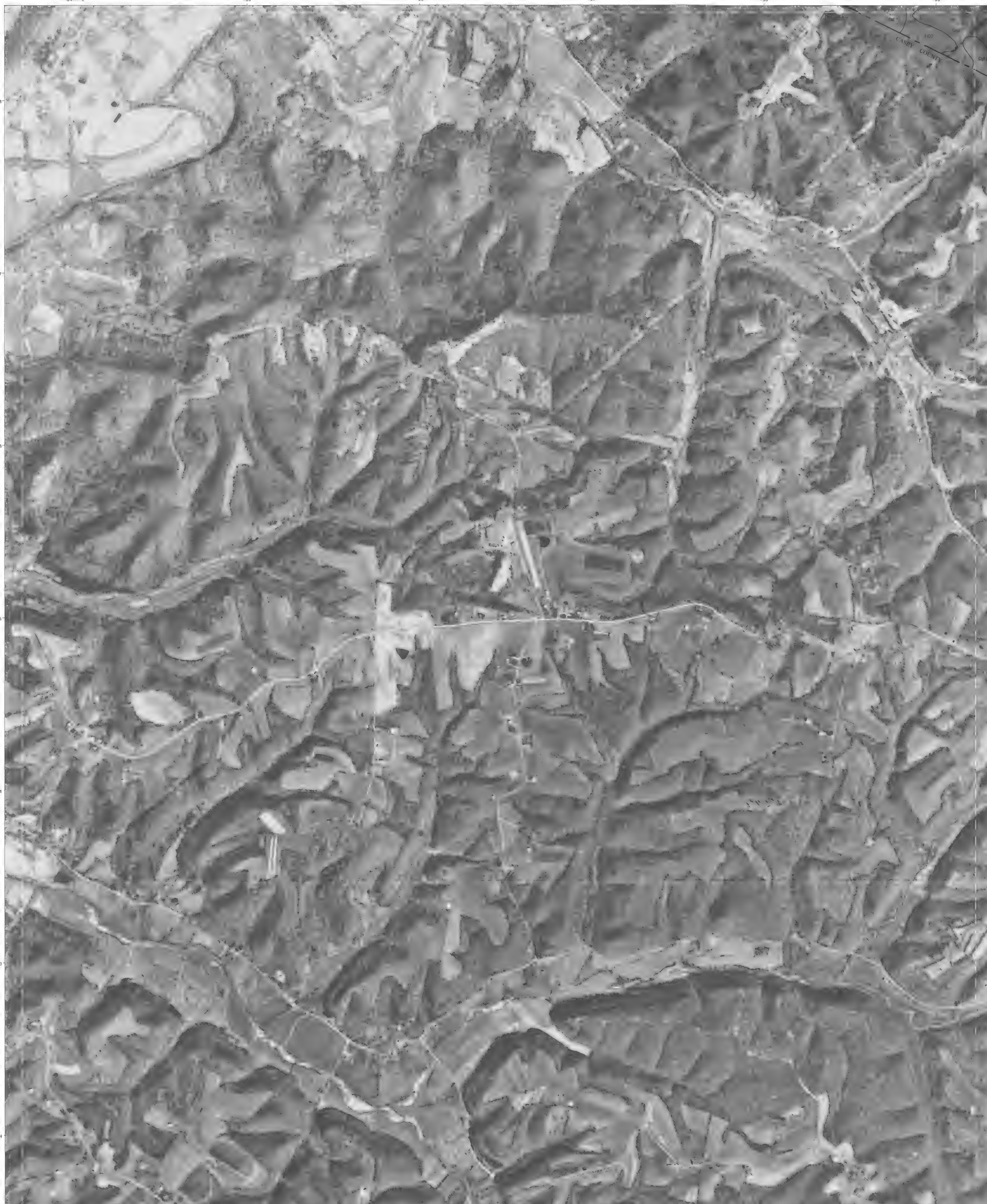
KILOMETERS

41 CRAB ORCHARD NE
42 BRODHEAD NW
43 BRODHEAD NE
50 CRAB ORCHARD SE
56 WOODSTOCK NE
57 MARETBURG NW

INDEX TO ADJOINING 3.75 MAPS

BRODHEAD SW, KENTUCKY
3.75 MINUTE SERIES
SHEET NUMBER 51 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.



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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

45	46	47
		53
		58

45 HUSTONVILLE SW
46 HUSTONVILLE SE
47 HALLS GAP SW
53 EUBANK NW
58 EUBANK SW

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YOSEMITE NE, KENTUCKY

3.75 MINUTE SERIES
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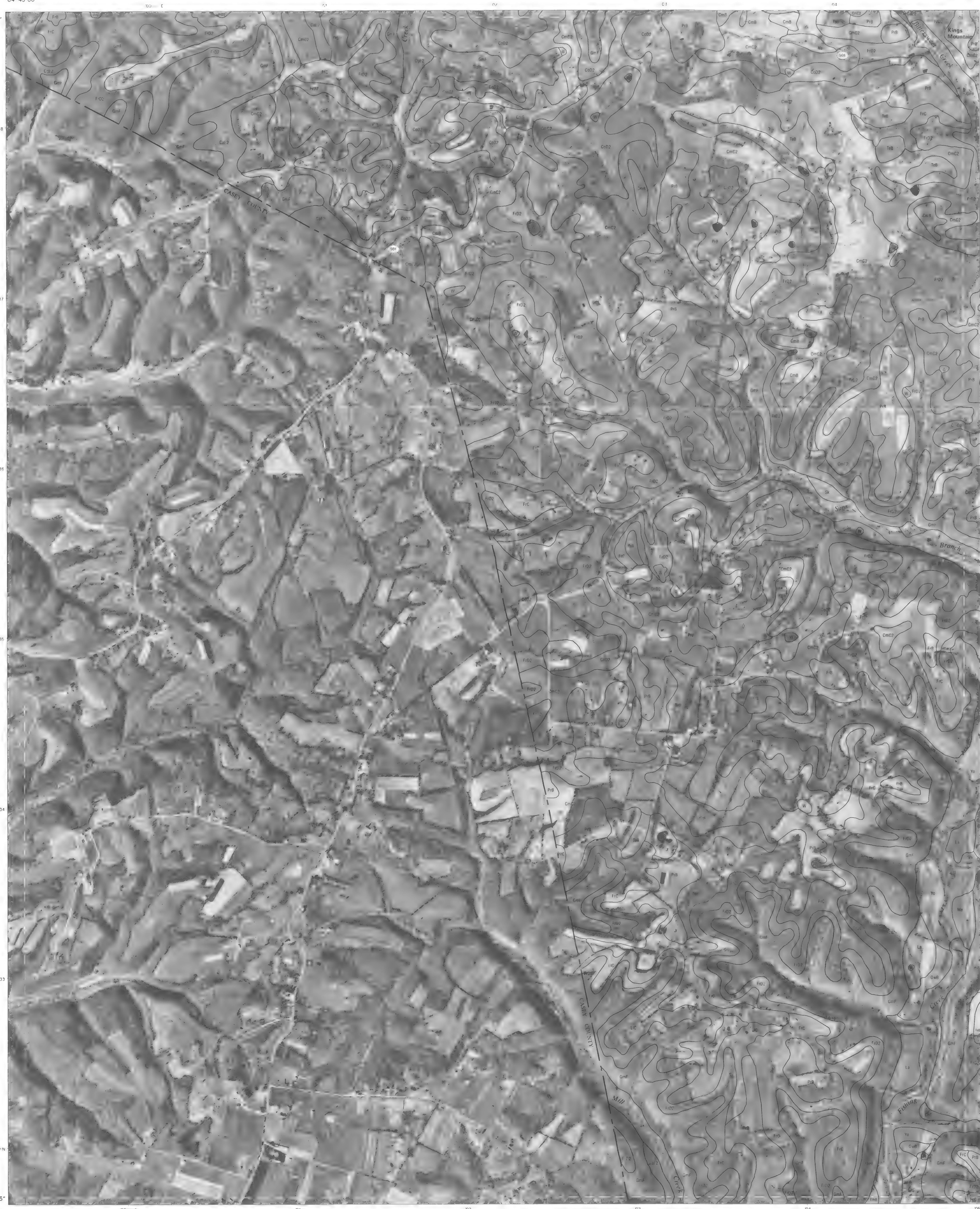
Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE



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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

46 HUSTONVILLE SE
47 HALLS GAP SW
48 HALLS GAP SE
52 YOSEMITE NE
54 EUBANK NE
58 EUBANK SW
59 EUBANK SE

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EUBANK NW, KENTUCKY

3.75 MINUTE SERIES
SHEET NUMBER 53 OF 61

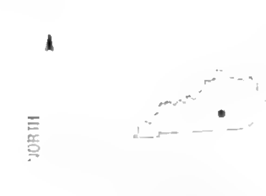
Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

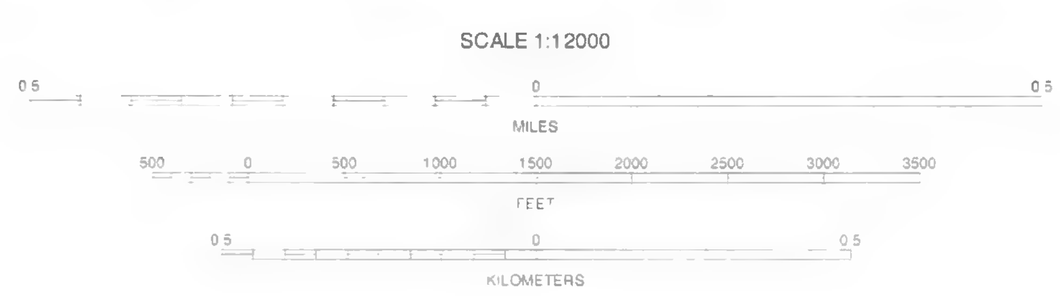
GARRARD AND LINCOLN COUNTIES, KENTUCKY
EUBANK NE QUADRANGLE
SHEET NUMBER 54 OF 61

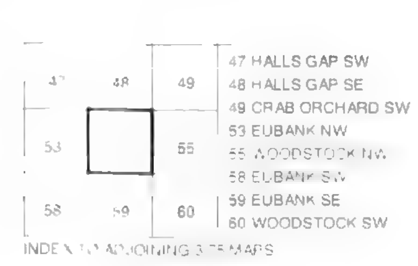
This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1997-1998 aerial photography. Hydrography information was acquired from the Natural Resources Conservation Service. The hydrography layer was edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUARTER QUADRANGLE LOCATION





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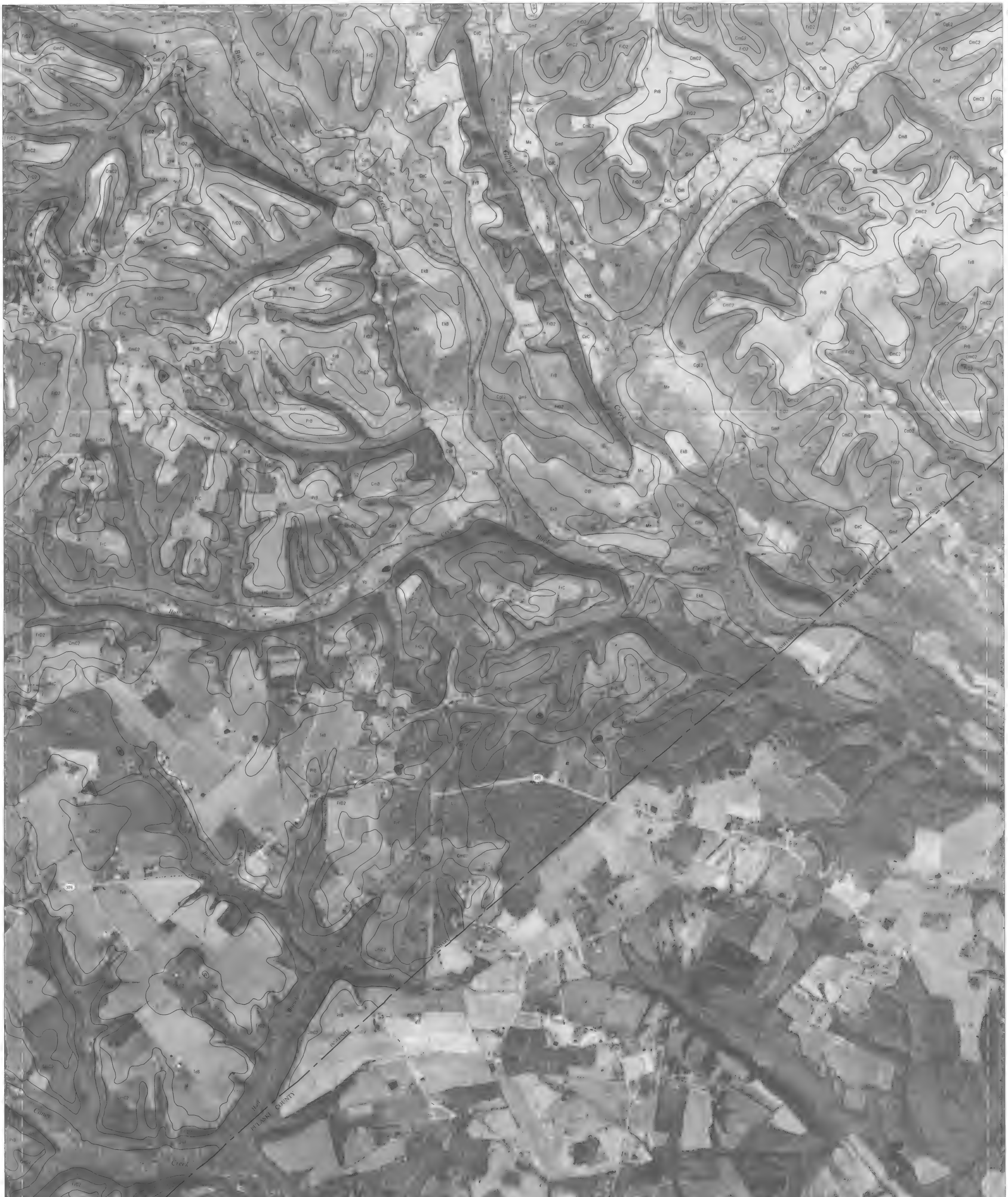
EUBANK NE, KENTUCKY
3.75 MINUTE SERIES
SHEET NUMBER 54 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

GARRARD AND LINCOLN COUNTIES, KENTUCKY
WOODSTOCK NW QUADRANGLE
SHEET NUMBER 55 OF 61



84 37 30

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North American Datum of 1983 (NAD83), GRS 80 Spheroid. 1000 meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:12000

84 33 45

WOODSTOCK NW, KENTUCKY

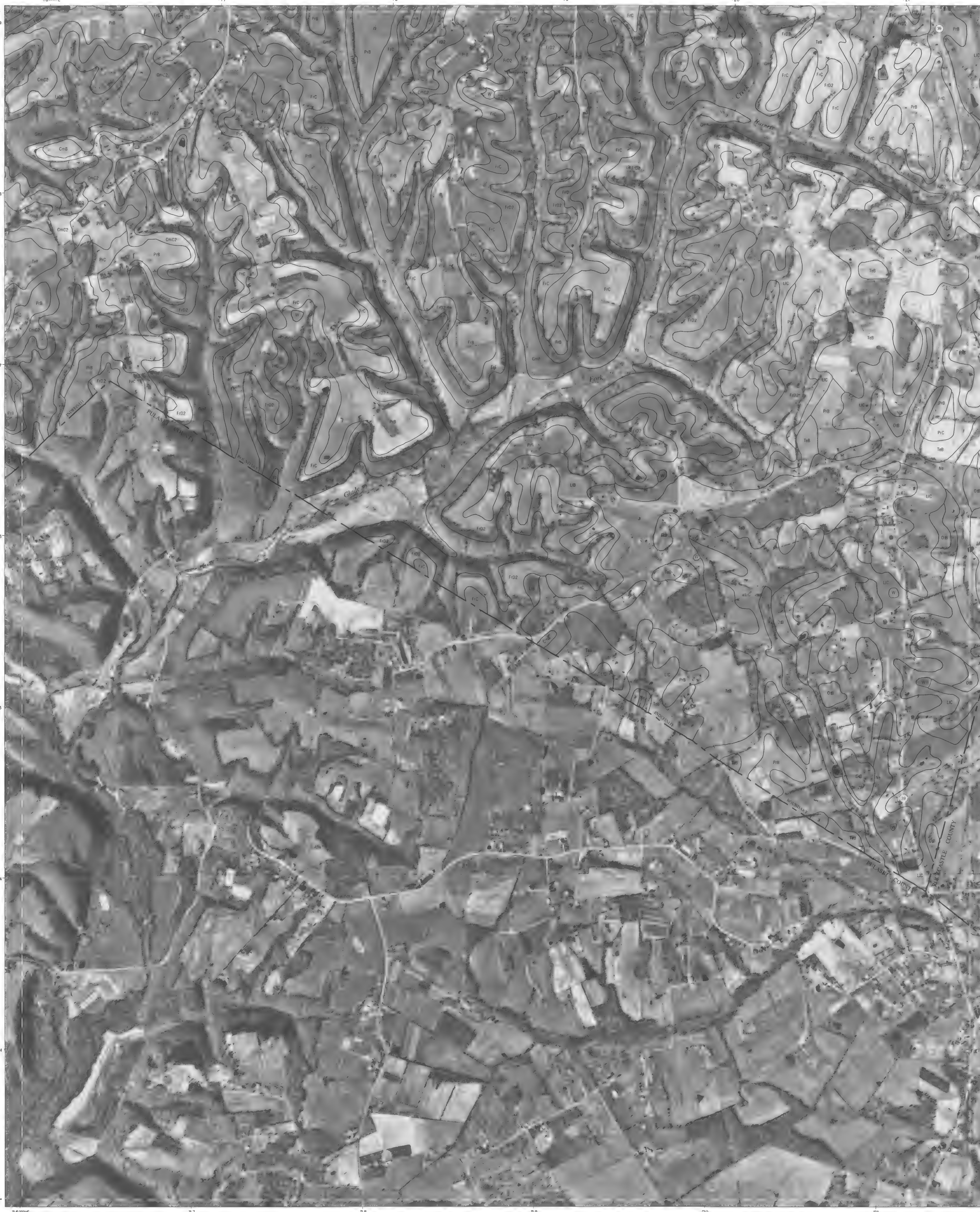
3.75 MINUTE SERIES
SHEET NUMBER 55 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

GARRARD AND LINCOLN COUNTIES , KENTUCKY
WOODSTOCK NE QUADRANGLE
SHEET NUMBER 56 OF 61

84° 33′45″ — 84° 30′00″
37° 22′30″



37° 18′45″
84° 33′45″ — 84° 30′00″

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES: 0.5 — 0 — 0.5

FEET: 500 0 500 1000 1500 2000 2500 3000 3500

KILOMETERS: 0.5 — 0 — 0.5

49	50	51
55		57
60		

49 CRAB ORCHARD SW
50 CRAB ORCHARD SE
51 BRODHEAD SW
55 WOODSTOCK NW
57 MARETBURG NW
60 WOODSTOCK SW

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WOODSTOCK NE, KENTUCKY
3.75 MINUTE SERIES
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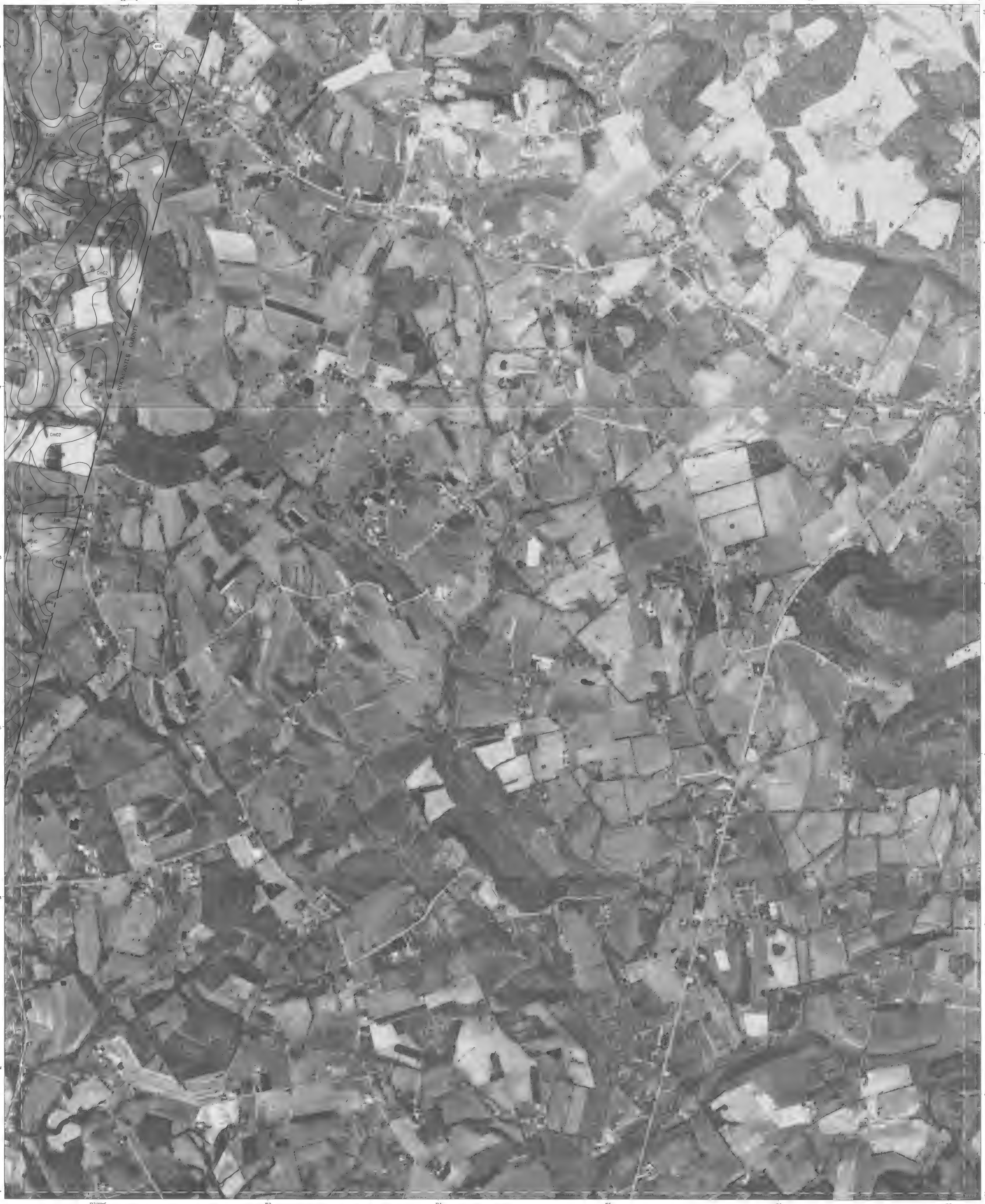
Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

GARRARD AND LINCOLN COUNTIES , KENTUCKY
MARETBURG NW QUADRANGLE
SHEET NUMBER 57 OF 61



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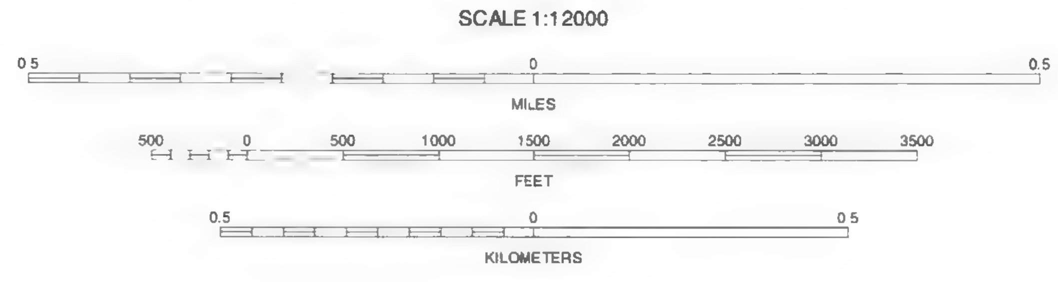
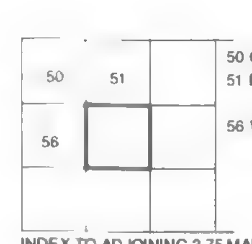
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:12000





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MARETBURG NW, KENTUCKY
3.75 MINUTE SERIES
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Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
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GARRARD AND LINCOLN COUNTIES , KENTUCKY
EUBANK SW QUADRANGLE
SHEET NUMBER 58 OF 61

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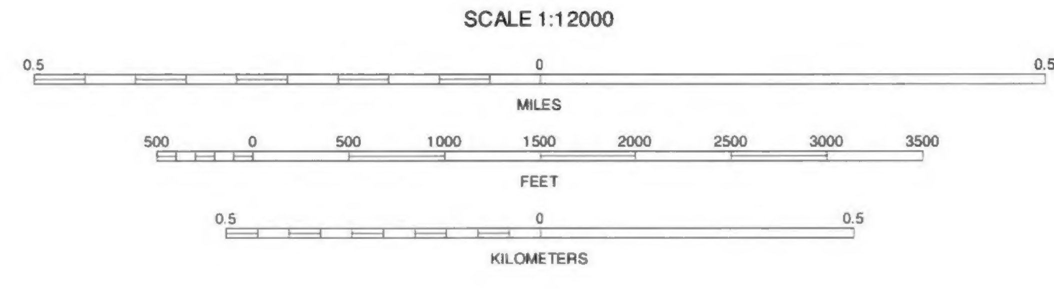
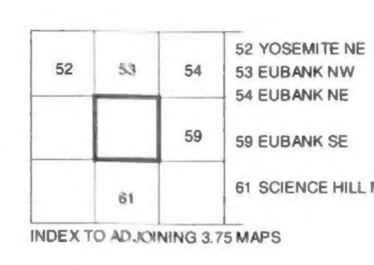
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.





EUBANK SW, KENTUCKY
3.75 MINUTE SERIES
SHEET NUMBER 58 OF 61

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

GARRARD AND LINCOLN COUNTIES`, KENTUCKY
EUBANK SE QUADRANGLE
SHEET NUMBER 59 OF 61

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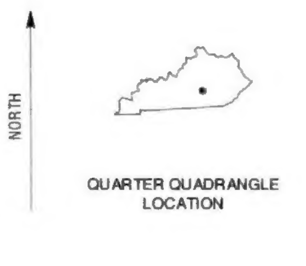
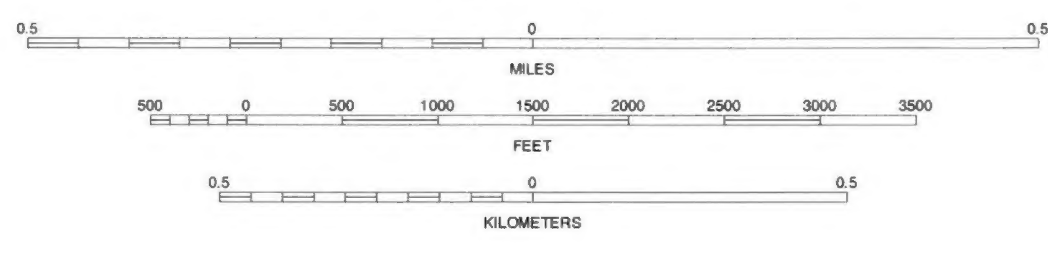
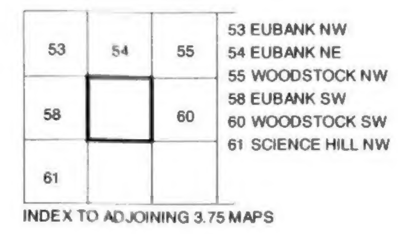
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUARTER QUADRANGLE LOCATION

SCALE 1:12000





53 EUBANK NW
54 EUBANK NE
55 WOODSTOCK NW
58 EUBANK SW
60 WOODSTOCK SW
61 SCIENCE HILL NW

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EUBANK SE, KENTUCKY

3.75 MINUTE SERIES
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Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
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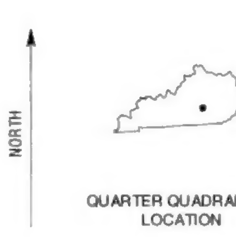
GARRARD AND LINCOLN COUNTIES , KENTUCKY
WOODSTOCK SW QUADRANGLE
SHEET NUMBER 60 OF 61

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1997-1998 aerial photography. Hydrography information was acquired from the Natural Resources Conservation Service. The hydrography layer was edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



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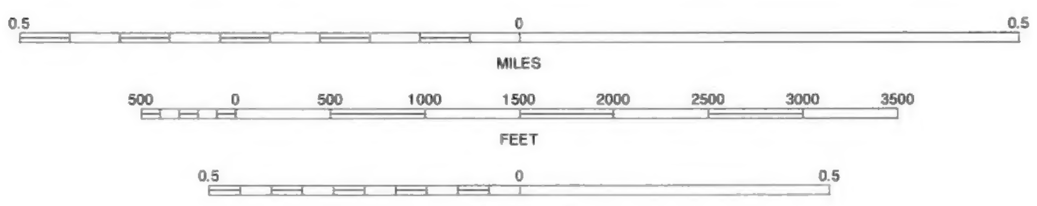

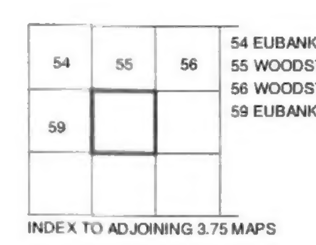

WOODSTOCK SW, KENTUCKY
3.75 MINUTE SERIES
SHEET NUMBER 60 OF 61

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

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'GARRARD AND LINCOLN COUNTIES', KENTUCKY
SCIENCE HILL NW QUADRANGLE
SHEET NUMBER 61 OF 61

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES: 0.5 0 0.5

FEET: 500 0 500 1000 1500 2000 2500 3000 3500

KILOMETERS: 0.5 0 0.5

58 EUBANK SW
59 EUBANK SE

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SCIENCE HILL NW, KENTUCKY
3.75 MINUTE SERIES
SHEET NUMBER 61 OF 61

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